399 55 4/1
Area 8 5

Scout Report sent out

Noted in the NID File

Location map pinned

Approval or Disapproval Letter

Date Completed, P. & A. or operations suspended — 9-58

Pin changed on location map

Affidavit and Record of A & P

Water Shut-Off Test

Gas-Oil Ratio Test

Well Log Filed

FILE NOTATIONS

Entered in N I D File ✓
Entered On S R Sheet ✓
Location Map Pinned ✓
Card Indexed
I W R for State or Fee Land

Checked by Chief ✓
Copy N I D to Field Office ✓
Approval Letter
Disapproval Letter

PWB

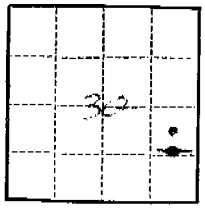
COMPLETION DATA:
Date Well Completed 9-13-58
Location Inspected
Bond released
State of Fee Land

OW WW TA
GW OS PA ✓

LOGS FILED

Driller's Log 10-28-58
Electric Logs (No.) 1
E I E-I GR GR-N Micro
Lat Mi-L Sonic Other Radioactivity Log

Form 9-331a
(Feb. 1951)



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office Utah
Lease No. U-06365
Unit

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	X	SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

April 30, 1957

Well No. Federal, Bowknot # 1 is located 1520 ft. from {N/S} line and 920 ft. from {E/W} line of sec. 30

NW¼ NE¼ Sec. 30 (¼ Sec. and Sec. No.) | 25 South (Twp.) | 18 East (Range) | S.L.M. (Meridian)

(Field) | Grand (County or Subdivision) | Utah (State or Territory)

The elevation of the derrick floor above sea level is 5100 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

The company plans to drill a well to test all possible oil and/or gas zones down to and including the Leadville Lime which is expected at approximately 6500 feet. The approval to set the following strings of casing is requested.

1. 150 Ft. of 13-3/8" #40 48# Cond C. Casing cemented top to bottom.
2. Production string- 5100 ft. 5½" 14# J 55 T. and C. ~~Casing, cemented with 250 sacks of c-~~ 1100 ft. 5½" 15.5 # J 55 T. & C. casing cemented with 250 sacks of cement.
3. In the event water sands are encountered as expected at 2500 to 2700 ft. the water shutoff string of casing consistingof approx. 2800 ft. 10¾" 40.5 # J 55 T. & C. cemented with 250 sacks of cement will be run.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company FEDERAL OIL COMPANY

Address ~~Box 77 PROVO, Utah or~~ ~~315 Newhouse Bldg.~~ Salt Lake City, Utah

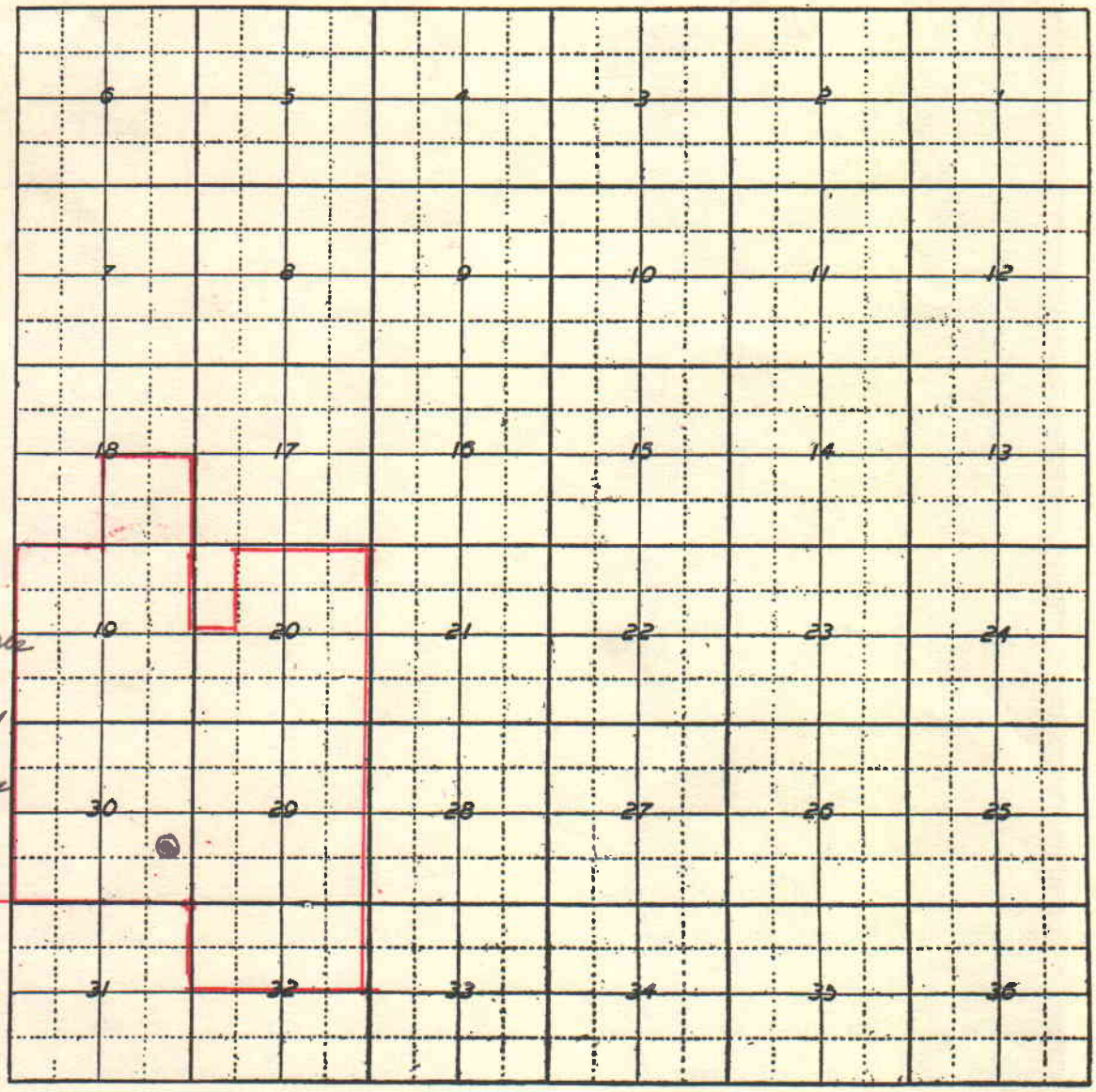
By [signature]

Title President

U. S. GOVERNMENT PRINTING OFFICE : 1956- O-393560

County.

Township No. Range No. Meridian.



3120 acres under Federal oil & gas operation

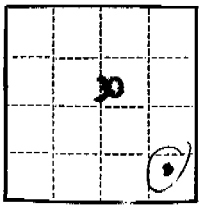
There is no gas well within 4960 ft. or oil well within 1000 ft of this proposed location

Norman L Jacobs

Township 25 So Range 18 E. Meridian

SCALE 5280 FEET TO AN INCH

Form 9-331a
(Feb. 1951)



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office UTAH
Lease No. U-06365
Unit

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	X	SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

May 1, 1957

Federal, Bowmot # 1
Well No. ... is located 1120 ft. from {N/S} line and 760 ft. from {E/W} line of sec. 30

SE¼ of SE¼ (¼ Sec. and Sec. No.) | 25 S (Twp.) | 18 E (Range) | 18-East Utah S.L.M. (Meridian)

(Field) | Grand (County or Subdivision) | Utah (State or Territory)

The elevation of the derrick floor above sea level is 5100 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

The company plans to drill a well to test all possible oil and/or gas zones down to and including the Leadville Lime which is expected at approximately 6500 ft. Approval for the following proposed casing plan is requested.

1. 20 Ft. of 16" conductor pipe fully cemented.
2. 1000 Ft. 13-3/8" 48 # J. 55 set for cavein protection if needed.
3. Approx. 2800 Ft. or in the top of the Hermosa of 10-3/4" 40.5 H-40 or J-55 T.&.C. casing cemented with 600 sacks.
4. Approx. 6500 Ft. or to production, 7" 23 # J-55 T.& C. Casing cemented with 200 sacks.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company FEDERAL OIL COMPANY

Address P.O. Box 77 PROVO, UTAH or
% 315 Mess Bldg.
Salt Lake City, Utah

By [signature]

Title President

U. S. GOVERNMENT PRINTING OFFICE : 1956—O-393560

FEDERAL OIL COMPANY
Box 77, Provo, Utah

May 1, 1957

Re: Well No. Federal
Bowknot #1

State of Utah
Oil & Gas Conservation Commission
Room 140, State Capitol
Salt Lake City, Utah

Gentlemen:

This well is located 1520 feet from the south line and 920 feet from the east line of Section 30, Township 25 South, Range 18 East, SLBM, Grand County, because of two knolls on either side which fall in the center of the two 40 acre plots. The proposed location is in a valley between the two knolls.

It would cost us approximately a $1000.00 more to drill upon one of these knolls, and the building of the road to the top of the knoll is not known at the present time.

An exception to the spacing of the drilling location is requested, therefore, as a result of the topography.

Yours very truly,

FEDERAL OIL COMPANY

Norman L. Jacobs

NORMAN L. JACOBS
PRESIDENT

O.K. as to Topography and Casing program.
Cleon B. Feight
May 1, '57.

May 1, 1957

Federal Oil Company
c/o 315 Ness Building
Salt Lake City, Utah

Attention: I. L. Jacobs

Gentlemen:

This is to acknowledge receipt of your notice of intention to drill Well No. Federal-Bowknot 1, which is to be located 1520 feet from the south line and 920 feet from the east line of Section 30, Township 25 South, Range 18 East, SLBM, Grand County.

Please be advised that insofar as this office is concerned, approval to drill said well is hereby granted.

Yours very truly,

OIL & GAS CONSERVATION COMMISSION

CLEON B. FEIGHT
SECRETARY

CBF:cn

cc: Don Russell, Dist. Eng.
U.S.G.S. Federal Bldg.
Salt Lake City, Utah

May 6, 1957

Federal Oil Company
Box 77
Provo, Utah

Attention: Norman L. Jacobs

Gentlemen:

With reference to our letter of May 1, 1957, approval to drill Well No. Federal Bowknot 1, 1520 feet from the south line and 920 feet from the east line of Section 30, Township 25 South, Range 18 East, SLBM, Grand County, is hereby cancelled.

Approval to drill said well 1120 feet from the south line and 760 feet from the east line of Section 30, Township 25 South, Range 18 East, Grand County, is hereby granted.

Yours very truly,

OIL & GAS CONSERVATION COMMISSION

CLEON B. FEIGHT
SECRETARY

CBF:en

cc: Don Russell, Dist. Eng.
USGS, Federal Building
Salt Lake City, Utah

FEDERAL OIL COMPANY
Box 77, Provo, Utah

May 6, 1957

Re: Well No. Federal Bowknot 1

State of Utah
Oil & Gas Conservation Commission
Room 140, State Capitol Building
Salt Lake City, Utah

Gentlemen:

After examining the location at 1520 feet from the south line and 1920 feet from the east line, we wish to amend the location to 1120 feet from the south line and 760 feet from the east line of Section 30-Township 25 South-Range 18 East, because hard rock was encountered. Therefore, a subsequent location was picked.

To drill this well at anyother location in this 40 would located the well on top of the knoll and hard rock. It would cost approximately a thousand dollars more to drill upon one of these knolls and the building of the roads would not be known at this time.

Exception to the regulations spacing of the drilling location is requested, therefore, as a result of the topography.

Very sincerely yours,

FEDERAL OIL COMPANY

Norman L Jacobs

NORMAN L. JACOBS
President

Form 9-331a
(Feb. 1951)

Budget Bureau 42-R358.2.
Approval expires 12-31-52.

Land Office Utah

Lease No. 03365

Unit

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS	X	SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

May 29, 19 57.

Well No. Federal Bowknot #1 is located 1120 ft. from {N/S} line and 780 ft. from {E/W} line of sec. 30

NE 1/4 of SE 1/4 (¼ Sec. and Sec. No.) 25 South (Twp.) 18 East (Range) S.L.M. (Meridian)

(Field) Grand (County or Subdivision) Utah (State or Territory)

The elevation of the derrick floor above sea level is 5206 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Recent negotiations have made it advantageous to move the cable rig out and rotary tools in. Changing rigs is now in progress and 20 feet of 13" conductor pipe has been set, and cemented. Depth of the well is 384 feet.
Approval for permission to set and cement the following casing strings is requested:

150 to 160 feet 13 3/8" 48# J 55 cemented from top to bottom.
Approximately 6500 feet 7" 23# J 55 & C casing cemented with two hundred (200) sacks.

NOTE: In the event oil in commercial quantities is encountered in a zone above 6500 feet the 7" production string will be set and cemented accordingly.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Federal Oil Company

Address P. O. Box 77

Provo, Utah

By Norman L. Jacobs

Title President

U. S. GOVERNMENT PRINTING OFFICE 16—8437-4

Budget Bureau No. 42-R356.4.
Approval expires 12-31-55.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake
LEASE NUMBER U-06465
UNIT Bowknot

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah County Grand Field Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of May, 19 57, Drilling

Agent's address Box 411, Moab, Utah *Company* Federal Oil Co.

Signed

Phone Al 3-4561 *Agent's title* J. Murray Ruby, Geologist.

SEC. AND ¼ OF ¼	TWP.	RANGE	WELL NO.	DAYS PRODUCED	BARRELS OF OIL	GRAVITY	CU. FT. OF GAS (In thousands)	GALLONS OF GASOLINE RECOVERED	BARRELS OF WATER (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SE, SE,										
SE 30	25S	18E	Bowknot	# 1						Well spudded 10 May 1957. Drilld to depth of 704 ft by 16 May. Fished and reamed to 24 May. Shut down cable rig and rigged down in preparation to move on rotary tools. Waiting on rotary rig at end of month. Set 17 ft. of 16" conductor pipe and cemented full length.

NOTE.—There were no runs or sales of oil; no M cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(January 1950)

16—25766-7 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 42-R356.3.
Approval expires 12-31-62.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Ut.
LEASE NUMBER U-06365
UNIT Bowknot

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah County Grand Field Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of June, 19 57, Drilling

Agent's address Box 411, Moab, Utah Company Federal Oil Co.

Signed J. Murray Ruby

Phone AL 3-4561 Agent's title Geologist.

Sec. and ¼ of ¼	Twp.	Range	Well No.	Days Produced	Barrels of Oil	Gravity	Cu. Ft. of Gas (In thousands)	Gallons of Gasoline Recovered	Barrels of Water (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SE, SE, Sec 30	25S	18E	Bowknot # 1.						Noted Cmt 7-12-57	Depth at end of month was 1940 ft. in Cutler fm. See note below

Note: Moved in an Ideco 550 rotary rig, Denman Drilling Co. Set 165 ft. of 13 3/8" (H-40, 48#, 8 rd) surface casing and cemented full length with 70 sacks. Pumped Halliburton plug down and circulated into cellar. Rotary Kelley Bushing elevation is 5170 ft. Began drilling ahead with rotary on June 20th.

NOTE.—There were no runs or sales of oil; no M cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(January 1950)

16—25766-6 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 42-R356.3.
Approval expires 12-31-52.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Ut.
LEASE NUMBER U-06365
UNIT Bowknot

LESSEE'S MONTHLY REPORT OF OPERATIONS

8-6-57

State Utah County Grand Field Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of July, 19 57, Drilling

Agent's address Box 411, Moab, Utah *Company* Federal Oil Co.

Signed J. Murray Ruby

Phone AL 3-4561 *Agent's title* J. Murray Ruby, Geologist.

Sec. and ¼ of ¼	Twp.	Range	Well No.	Days Produced	Barrels of Oil	Gravity	Cu. Ft. of Gas (In thousands)	Gallons of Gasoline Recovered	Barrels of Water (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SE, SE, Sec 30,	25S	18E	Bowknot # 1							Drilled to 5549 ft. by 2:00 AM July 30. Drill pipe stuck and fishing and washing-over operations begun. Fishing at end of month.

NOTE: Please mark this report and the two previous ones CONFIDENTIAL.

NOTE.—There were no runs or sales of oil; no M. cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(Rev. 1950)

16—25766-5 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 42-R356.3.
Approval expires 12-31-52.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Ut.
LEASE NUMBER U-06565
UNIT Bowknot

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah *County* Grand *Field* Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of August, 1957, drilling

Agent's address Box 411, Moab, Utah *Company* Federal Oil Co.

Signed J. Murray Ruby

Phone AL 3-4561 *Agent's title* J. Murray Ruby, Geologist.

Sec. and ¼ of ¼	Twp.	Range	Well No.	Days Produced	Barrels of Oil	Gravity	Cu. Ft. of Gas (in thousands)	Gallons of Gasoline Recovered	Barrels of Water (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SE, SE, Sec. 30,	25S	18E	Bowknot #1.							Coring at 7425 at end of month.

CONFIDENTIAL

25-1 18E

NOTE.—There were no runs or sales of oil; no M. cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(January 1950)

16—25766-5 U. S. GOVERNMENT PRINTING OFFICE

Form 9-331a
(Feb. 1951)

Budget Bureau 42-R358.3.
Approval expires 12-31-55.

Land Office Salt Lake City, Utah
Lease No. U-06355
Unit Bowlmot

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL		Subsequent Report of Casing run	X

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

17 September, 1957

Well No. 1 is located 1120 ft. from {N/S} line and 760 ft. from {E/W} line of sec. 30

SE¼ of Sec 30 — (¼ Sec. and Sec. No.)
25 South — (Twp.)
18 East — (Range)
S.L.M. — (Meridian)
Bowlmot — (Field)
Grand County — (County or Subdivision)
Utah — (State or Territory)

The elevation of the derrick floor above sea level is 5170 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Ran 1971 ft. of No. 1, grade "D", 26#, 10 V thread 7" casing, and 5603 ft. of No. 1, J-55, 23 #, 8 round thread 7" casing to the total depth of 7574 ft. Ran guide shoe and float collar between first and second joints.

Cemented with 585 sx of cement and 82 sx of salt (NaCl). The salt was mixed with the first 490 sx of cement, giving a mixture of 17% salt. The last 95 sx of cement were run straight. Pumped by Halliburton, chased with plug to float collar, shut in under pressure for over 60 hours. Four centralizers were used through the 7300-7550 zone. Calculated fill-up — to 3800 ft. from surface.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Federal Oil Co.

Address Box 77, Provo, Utah

By J. Murray Ruby

Title Geologist

U. S. GOVERNMENT PRINTING OFFICE 16—8437-5

Budget Bureau No. 42-R356.5.
Approval expires 12-31-60.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Utah
LEASE NUMBER 06365
UNIT

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah County Grand Field Wild Cat

The following is a correct report of operations and production (including drilling and producing wells) for the month of September, 19 57,

Agent's address Federal Oil Company Box 77, Provo, Utah

Signed Norman H. Jackson

Phone Franklin 86345 Agent's title President

Sec. and ¼ of ¼	Twp.	Range	Well No.	Days Produced	Barrels of Oil	Gravity	Cu. Ft. of Gas (In thousands)	Gallons of Gasoline Recovered	Barrels of Water (If none, so state)	Remarks (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SW¼ SW¼	25	18	Bowknot No. 1							Well perforated between 7410 and 7488 to check for water shutoff and possible oil production, on Sept.29, 1957 Still swabbing at Oct. 1, 1957. Packer set at 7334'. Recovered drilling mud, slight oil shows on swabbing.

NOTE.—There were None runs or sales of oil; None M cu. ft. of gas sold; ____ runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

State

COPY RETAINED DISTRICT OFFICE

Budget Bureau No. 42-R356.5.
Approval expires 12-31-60.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Utah
LEASE NUMBER 06365
UNIT

U. S. GEOLOGICAL SURVEY RECEIVED NOV 6 1957 OIL & GAS DIV. SALT LAKE CITY, UTAH

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah County Grand Field Wild Cat

The following is a correct report of operations and production (including drilling and producing wells) for the month of October, 19 57,

Agent's address Federal Oil Box 77, Provo, Utah *Company*

Signed Norman H. [illegible] President

Phone Franklin 3 6345 *Agent's title*

SEC. AND ¼ OF ¼	TWP.	RANGE	WELL NO.	DAYS PRODUCED	BARRELS OF OIL	GRAVITY	CU. FT. OF GAS (In thousands)	GALLONS OF GASOLINE RECOVERED	BARRELS OF WATER (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SE¼	25	18	Bowknot No. 1							We swabbed up until Oct. 3, 1957. On Oct. 3 we put 500 gallons of mud acid and swabbed and recovered drilling mud, acid and slight oil. On Oct. 12, 1957 we applied 1500 gals. of acid at the zone between 7410 and 7464. We swabbed, until Oct. 17, 1957. Recovered acid, oil cut mud and swabbed until it was swabbed dry. On Oct. 17 & 18 perforated upper zone at intervals between 7366 and 7393' - six shots per foot for 20'. Poured 750 gallons of mud acid - swabbed until Oct. 23 and recovered oil stained mud and acid water. Swabbed until Oct. 26, then we poured 3000 gals. of acid and swabbed until Oct. 26 of which several barrels of oil was recovered. Then another 3000 gallons of regular acid was poured. Still swabbing and recovering mud, acid water, oil stains emulsion. Changing work over rigs now in process.

NOTE.—There were ____ runs or sales of oil; ____ M cu. ft. of gas sold; ____ runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(January 1950)

COPY RETAINED DISTRICT OFFICE

16—25766-8 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 42-R356.3.
Approval expires 12-31-52.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Ut.
LEASE NUMBER U-06365
UNIT Bowknot

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah *County* Grand *Field* Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of November, 1957, Testing and completion

Agent's address Box 411, Moab, Utah *Company* Federal Oil Co.

Signed J. M. Ruby

Phone Al 3-2305 *Agent's title* Geologist

SEC. AND ¼ OF ¼	TWP.	RANGE	WELL NO.	DAYS PRODUCED	BARRELS OF OIL	GRAVITY	CU. FT. OF GAS (In thousands)	GALLONS OF GASOLINE RECOVERED	BARRELS OF WATER (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SE, SE, Sec. 30,	25S,	18E	Bowknot # 1.							From last report, well was swabbed until Nov. 3rd., recovering acid water, some slugs of oil and some gas, and some mud. Shut down until Nov. 10th. Swabbed three days, at first had fluid rise with some oil and gas, swabbed until brine water and red upper formation came in. Channelling evident. Squeezed perforations (and cement channel) with 125 sx on Nov. 18th. Shut in 82 hours under 1900# pressure. On opening head the tubing was on a vacuum with fluid down 600 ft. While squeezing, cement went in under 3200# and pressure dropped to 2000# when the water hit the perforations. Pressure check at end of 82 hours checked O.K. — held 2400#. Packer stuck, had to fish and jar it out. Got packer out on Nov. 27th. Went in to drill 22 ft. of cement in casing. Drilling cement at end of month.

CONFIDENTIAL

NOTE.—There were no runs or sales of oil; no M cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(January 1950)

16—25786-6 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 42-R356.3.
Approval expires 12-31-52.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Ut.
LEASE NUMBER U-06365
UNIT Bowknot

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah County Grand Field Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of December, 19 57, Testing and completion.

Agent's address Box 411, Moab, Utah *Company* Federal Oil Co.

Signed J. Murray Duby

Phone Al 3-2305 *Agent's title* Geologist

SEC. AND ¼ OF ¼	TWP.	RANGE	WELL NO.	DAYS PRODUCED	BARRELS OF OIL	GRAVITY	CU. FT. OF GAS (In thousands)	GALLONS OF GASOLINE RECOVERED	BARRELS OF WATER (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SE, SE, SEC. 30	25S	18E	Bowknot # 1.							Shut down since 19th of December to review the operation and plan further work.

From November report to shutting down the cement was drilled out and the hole cleaned up. Perforated the zone 7388-7400 with 6 jet shots per foot on Dec. 6th and swabbed hole dry. Acidized on Dec. 7th with 1200 gal. of Dowell Gel X-100. Broke down at 4800# and went away at 2000# and 2800#. Started swabbing Dec. 8th and on the 9th salty muddy water came in followed by red muddy water, slight oil film. Apparently channel behind casing re-opened.
Re-squeezed with 100 sx of cement on Dec. 12th, drilled out on the 14th, acidized with 1600 gal. regular acid on the 16th. Swabbed the 17th and 18th, got some oil, then red muddy water again, channel probably re-opened. Shut down temporarily on the 19th to review operation and plan further completion work.

CONFIDENTIAL

NOTE.—There were no runs or sales of oil; no M. cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(January 1950)

16—25766-5 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 42-R356.3.
Approval expires 12-31-52.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Ut.
LEASE NUMBER U-06365
UNIT Bowknot

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah County Grand Field Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of January, 19 58, Temporarily shut down.

Agent's address Box 411, Moab, Utah Company Federal Oil Co.

Signed J. M. Finley

Phone Al 3-2305 Agent's title Geologist

Sec. and ¼ of ¼	Twp.	Range	Well No.	Days Produced	Barrels of Oil	Gravity	Cu. Ft. of Gas (In thousands)	Gallons of Gasoline Recovered	Barrels of Water (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SE, SE, Sec. 30	25S	18E	Bowknot # 1							Shut down since 19th of December to review Operation and plan further work.

RECEIVED FEB 3 1958

Negotiations are under way with several major oil companies to take ove r the opera tion and recomplete the well, and to drill another well. Progress is being made.

NOTE.—There were no runs or sales of oil; no M cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(January 1950)

16—25768-6 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 12-R356.4.
Approval expires 12-31-55.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, UT.
LEASE NUMBER U - 06365
UNIT Bowknot

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah *County* Grand *Field* Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of February, 19 58 Temporarily shut down.

Agent's address Box 411, Moab, Utah *Company* Federal Oil Co.

Signed J. M. Curley

Phone Al 3 - 2305 *Agent's title* Geologist

Sec. and ¼ of ¼	Twp.	Range	Well No.	Days Produced	Barrels of Oil	Gravity	Cu. Ft. of Gas (In thousands)	Gallons of Gasoline Recovered	Barrels of Water (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SE, SE, Sec. 30	25S	18E	Bowknot # 1.							

Status same as reported last month.

CONFIDENTIAL

NOTE.—There were no runs or sales of oil; no M cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(January 1950)

16—25766-7 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 42 R356.4.
Approval expires 12-31-55.

Salt Lake City, Utah.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE U-06365
LEASE NUMBER Bowlnot
UNIT

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah *County* Grand *Field* Bowlnot

The following is a correct report of operations and production (including drilling and producing wells) for the month of March 19 53, Temporarily shut down.

Agent's address Box 411, Moab, Utah *Company* Federal Oil Co.

Signed

Phone AI 3-2305 *Agent's title* Geologist

SEC. AND ¼ OF ¼	TWP.	RANGE	WELL NO.	DATE PRODUCED	BARRELS OF OIL	GRAVITY	CU. FT. OF GAS (In thousands)	GALLONS OF GASOLINE RECOVERED	BARRELS OF WATER (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SE, SE, Sec. 30	25S	18E	Bowlnot # 1.							Status same as reported last month. Negotiating to resume operations. CONFIDENTIAL

NOTE.—There were no runs or sales of oil; no M cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in licate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

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16—25760-7 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 42-R356.4.
Approval expires 12-31-55.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Ut.
LEASE NUMBER U-06365
UNIT Bowknot

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah County Grand Field Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of April, 1958, Temporarily shut down.

Agent's address Box 411, Moab, Utah Company Federal Oil Co.

Signed

Phone AL 3-2305 Agent's title Geologist

SEC. AND ¼ OF ¼	TWP.	RANGE	WELL NO.	DAYS PRODUCED	BARRELS OF OIL	GRAVITY	CU. FT. OF GAS (In thousands)	GALLONS OF GASOLINE RECOVERED	BARRELS OF WATER (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
[illegible], [illegible], [illegible]. 30,	25S	18E	Bowknot	# 1						Status same as reported last month. Negotiating to resume operations. CONFIDENTIAL

NOTE.—There were no runs or sales of oil; no M cu. ft. of gas sold; ____ runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(January 1950)

16—25766-7 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 42-R356.4.
Approval expires 12-31-55.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Ut.
LEASE NUMBER U-06365
UNIT Bowknot

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah *County* Grand *Field* Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of May, 56, Temporarily shut down.

Agent's address Box 411 Moab, Utah *Company* Federal Oil Co.

Company address: Box 77, Provo, Utah *Signed*

Phone *Agent's title* Geologist

SEC. AND ¼ OF ¼	TWP.	RANGE	WELL NO.	DATE PRODUCED	BARRELS OF OIL	GRAVITY	CU. FT. OF GAS (In thousands)	GALLONS OF GASOLINE RECOVERED	BARRELS OF WATER (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
NE, NE, Sec. 30,	25S	18E	Bowknot #1.							Status same as reported last month. Negotiating to resume operations. CONFIDENTIAL.

NOTE.—There were No runs or sales of oil; No M cu. ft. of gas sold; No runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

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(January 1950)

16—25766-7 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 42-R356.5.
Approval expires 12-31-60.

LAND OFFICE Salt Lake City, Ut.
LEASE NUMBER U-0635
UNIT Bowknot

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah *County* Grand *Field* Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of June & July, *19* 58, Temporarily shut down.

Agent's address Box 411 Moab, Utah *Company* Federal Oil Co.

Company address: Box 77, Provo, Utah *Signed* J. M. Finley

Phone *Agent's title* Geologist

SEC. AND ¼ OF ¼	TWP.	RANGE	WELL NO.	DAYS PRODUCED	BARRELS OF OIL	GRAVITY	CU. FT. OF GAS (In thousands)	GALLONS OF GASOLINE RECOVERED	BARRELS OF WATER (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
SE, SE, Sec 30	25S	18E	Bowknot # 1.							Status same as reported for May.

NOTE.—There were no runs or sales of oil; no M cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(January 1950)

16—25766-8 U. S. GOVERNMENT PRINTING OFFICE

Budget Bureau No. 42-R356.5.
Approval expires 12-31-60.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Ut.
LEASE NUMBER U-06365
UNIT Bowknot

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah County Grand Field Bowknot

The following is a correct report of operations and production (including drilling and producing wells) for the month of August, 1958, Working well over.

Agent's address Box 411, Moab, Utah Company Federal Oil Co.

Company address: Box 77, Provo, Utah *Signed* J. M. Bailey

Phone *Agent's title* Geologist

SEC. AND ¼ OF ¼	TWP.	RANGE	WELL NO.	DAYS PRODUCED	BARRELS OF OIL	GRAVITY	CU. FT. OF GAS (In thousands)	GALLONS OF GASOLINE RECOVERED	BARRELS OF WATER (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
NE, SE, Sec 30	25S	18E	Bowknot # 1.							Workover of well commenced 8-23-58: 1. 8-26-58 made water shut off test of 7" casing at 7283 ft. Pressure tested 6 one half inch holes to 4500# without loss of fluid. 2. 8-31-58 perforated intervals 7339-7352 and 7336-7321 with 6 shots per foot. 3. Swabbing to test upper intervals. Found bridge plug from previous work at 7306.

NOTE.—There were no runs or sales of oil; no M cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

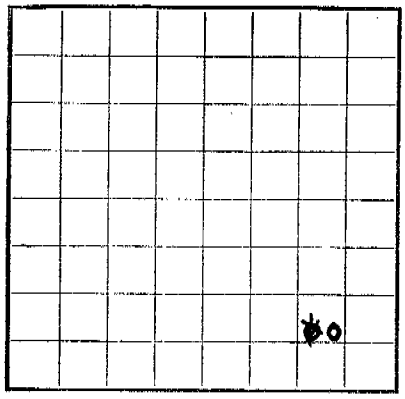
Form 9-329
(January 1950)

16—25766-8 U. S. GOVERNMENT PRINTING OFFICE

Form 9-330

Budget Bureau No. 42-R-355.3.
Approval expires 12-31-55.

U. S. LAND OFFICE Salt Lake City, Ut.
SERIAL NUMBER U-06365
LEASE OR PERMIT TO PROSPECT Lease



LOCATE WELL CORRECTLY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

M-H
10-21

LOG OF OIL OR GAS WELL

Company Feddral Oil Co. Address Box 77, Provo, Utah
Lessor or Tract Boulmot Field Boulmot State Utah
Well No. 1 Sec. 30 T. 25S R. 18E Meridian S.L.B.M. County Grand
Location 1120 ft. [N.] of S Line and 760 ft. [W.] of E Line of Sec. 30 Elevation 5170
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed

Date 10-27-58 Title President, Federal Oil Co.

The summary on this page is for the condition of the well at above date.

Commenced drilling 5-10, 19 57 Finished drilling , 19 58

OIL OR GAS SANDS OR ZONES

(*Denote gas by G*)

No. 1, from 7316 to 7456 No. 4, from to
No. 2, from to No. 5, from to
No. 3, from to No. 6, from to

See attached log and data for other possible showings.

IMPORTANT WATER SANDS

No. 1, from 7456 to total depth No. 3, from to
No. 2, from to No. 4, from to

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
16"	-	-	-	17 ft.	-	-	-	-	conductor
13 3/8"	48#	8	-	165 ft.	Float	-	-	-	surface
7"	26#	8	-	1971 ft.	guide shoe & float collar				long string
7"	23#	8	-	5603 ft.	-	-	-	-	" "

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
16"	17 ft.	cemented full length			
13 3/8"	165 ft.	cemented full length with 25 sx. Halliburton.			
7"	7574 ft.	cemented with 525 sx cement and 22 sx salt. Calculated fill up from TD to 5300.	See attached data for details.		

PLUGS AND ADAPTERS

Heaving plug—Material Length Depth set
Adapters—Material Size

SHOOTING RECORD

FOLD — MARK

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out
	See appendices.					

TOOLS USED

Rotary tools were used from 384 feet to 7574 feet, and from ..... feet to ..... feet

Cable tools were used from 0 feet to 384 feet, and from ..... feet to ..... feet

DATES

....., 19..... Put to producing ....., 19.....

The production for the first 24 hours was ..... barrels of fluid of which .....% was oil; .....% emulsion; .....% water; and .....% sediment. Gravity, °Bé. .....

If gas well, cu. ft. per 24 hours ..... Gallons gasoline per 1,000 cu. ft. of gas .....

Rock pressure, lbs. per sq. in. .....

EMPLOYEES

....., Driller Denmon Drilling Co., Contractor., Driller

....., Driller ....., Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
			Tops from gamma ray/neutron log:
			Kayenta – surface
			Wingate – 210
			Chinle – 520
			Moenkopi – 830
			U. Cutler – 1370
			White Rim memb. – 1466
			L. Cutler – 1654
			Rico – 2100
			Hermosa – 2723
			U. Paradox – 4070 top of salt
			L. Paradox – 6908 base of salt
			L. Hermosa – 7218 Pinkerton Trail
			Molas – 7253
			Leadville – 7316
			Madison – 7525

SEE ATTACHED WELL HISTORY, LOG, AND APPENDICES FOR DETAILED DATA.

[OVER]

16-44094-4

APPENDIX "A"

SUBJECT: SUMMARY OF HISTORY OF OPERATIONS, FEDERAL OIL COMPANY, BOWKNOT NO. 1 WELL

APPENDIX "A"

TO: MR. NORMAN L. JACOBS, PRESIDENT, FEDERAL OIL COMPANY

THE LOCATION FOR THIS WELL WAS MADE MAY 3, 1957. THE WELL WAS SPUDDED ON MAY 10 WITH A WALKER-NEER S-43 SPUDDER BY THE DENMAN DRILLING COMPANY OF FARMINGTON, NEW MEXICO. OPERATIONS WITH THE CABLE TOOL RIG WERE UNSATISFACTORY, AND DRILLING WAS DISCONTINUED AT A DEPTH OF 384 FT. ON MAY 25.

THE DENMAN DRILLING COMPANY MOVED IN AN IDECO 525 ROTARY RIG, SET 165 FT. OF 13 3/8" SURFACE CASING ON JUNE 10, AND STARTED DRILLING AHEAD FROM 384 FT. (394 FT. ROTARY) WITH AN 8 3/4" HOLE ON JUNE 20.

DRILLING PROCEEDED TO A DEPTH OF 1948 FT. BY JUNE 26, WITH ONLY MINOR LOST CIRCULATION AND ONE SHORT FISHING JOB FOR TWISTED OFF DRILL COLLARS. AT A DEPTH OF 1948 FT. THE DRILL PIPE BECAME STUCK AND FIVE DAYS WERE SPENT BACKING OFF AND WASHING OVER.

DRILLING RESUMED ON JULY 1 AND PROCEEDED WITHOUT DIFFICULTY TO 4100 FT. ON JULY 20. AT THIS POINT THE TOP OF THE SALT WAS REACHED AND THE MUD WAS CONVERTED TO SALT BASE. AS SOON AS THE MUD WAS CONDITIONED, DRILLING RESUMED AND PROCEEDED TO A DEPTH OF 5549 FT. ON JULY 30. AT THIS POINT THE DRILL PIPE BECAME STUCK AGAIN AND A SEVEN-DAY FISHING JOB ENSUED. DRILLING AHEAD RESUMED, AND JUNK IN THE HOLE GAVE TROUBLE FOR A FEW DAYS. 6674 FT. WAS REACHED ON AUGUST 12 WITHOUT MORE THAN NORMAL DIFFICULTY. AT THIS POINT EIGHT LINES WERE STRUNG UP ON THE LOCKS. IT SHOULD BE NOTED HERE THAT THE DRILL PIPE WAS IN VERY POOR CONDITION AND CONSTANT CAUTION AND INSPECTION WERE NECESSARY.

DRILLING FROM 6674 FT. TO 7236 FT. WAS CARRIED OUT BY AUGUST 23 WITHOUT DIFFICULTY. AT THIS POINT CORING BEGAN, SEVERAL FEET OF LIMESTONE WHICH APPEARED TO BE MISSISSIPPIAN HAVING BEEN DRILLED. THE FIRST CORE, 7236-7272 WAS PULLED ON AUGUST 25 AND WAS ALL MOLAS FORMATION, WITH THE LIMESTONE ABOVE BEING LOWER HERMOSA OR PINKERTON TRAIL FORMATION (THE FORMATION NOT HAVING BEEN ENCOUNTERED IN THE AREA BEFORE). DRILLING RESUMED AND PROCEEDED TO 7395 FT. BY AUGUST 28. THE MISSISSIPPIAN LEADVILLE LIMESTONE WAS TOPPED AT 7316 FT., BUT THE SAMPLES WERE HARD, DENSE LIMESTONE AND DOLOMITE WITH OCCASIONAL TRACES OF FLUORESCENCE. AT THE DEPTH OF 7395 FT., HOWEVER, IT WAS DECIDED TO CORE.

THE INTERVAL FROM 7395 TO 7500 WAS CORED, RECOVERING LIMESTONE AND DOLOMITE WHICH WAS FRACTURED IN PART, HAD SOME VUGGY POROSITY IN PART, WITH ANHYDRITE FILLED FRACTURES AND VUGS IN MANY PLACES. THE BEST FRACTURING WAS IN THE 7395 TO 7402 ZONE, AND THE FRACTURES WHICH HAD NOT BEEN FLUSHED WITH MUD BLED A LIGHT YELLOW-GREEN OIL WITH A SLIGHT SULPHUR ODOR. THE REMAINDER OF THE OIL SHOWS OCCURRED INTERMITTENTLY THROUGHOUT THE REMAINDER OF THIS CORED INTERVAL, EITHER FROM FRACTURES OR FINE VUGGY ZONES.

THE ZONE FROM 7500 TO 7529 WAS DRILLED AND CORING RESUMED AT THIS POINT. THE LAST CORE FROM 7529 TO 7574 (TOTAL DEPTH OF THE HOLE) WAS DOLOMITIC LIMESTONE, POROUS, AND WATER BEARING (MADISON FORMATION).

THE GAMMA RAY-NEUTRON LOG INDICATED THAT THE MOST FAVORABLE OIL SHOWING WAS IN THE 7386 TO 7402 ZONE. THE OTHERS APPEARED INTERMITTENT AND SCATTERED.

7574 FT. OF 7" CASING WAS RUN ON SEPTEMBER 9 AND CEMENTED. THE CEMENT WAS ALLOWED TO SET UNTIL THE 12TH, WHEN THE DENMAN RIG WAS RELEASED IN ORDER TO MOVE ON A SMALLER UNIT FOR COMPLETION WORK.

IT SHOULD BE NOTED HERE THAT THIS WELL WAS COMPLETED TO THIS POINT FOR A MUCH LOWER COST THAN HAD BEEN DONE IN THE AREA PREVIOUSLY.

THE COMPLETION RIG MOVED IN AND THE INTERVALS BETWEEN 7410-7428 AND 7459-7464 WERE PERFORATED WITH SIX BULLETS PER FOOT ON SEPTEMBER 30. IT WAS PLANNED TO TEST THE OIL SHOWS STARTING AT THE BOTTOM AND COMING UP. A PACKER WAS SET ON TUBING AND THE HOLE SWABBED TO CLEAN OUT UNTIL OCTOBER 3. A 500 GALLON MUD ACID TREATMENT WAS GIVEN AND THE WELL SWABBED DRY, RECOVERING ONLY RAINBOWS. 1500 GALLONS OF REGULAR ACID WERE PUMPED IN ON OCTOBER 12, WITH SWABBING UNTIL THE 17TH RECOVERING ACID WATER AND OIL CUT MUD (SWABBED DRY).

A BRIDGING PLUG WAS SET AT 7404 FT. ON OCTOBER 17 AND THE INTERVALS FROM 7366 TO 7370, 7376 TO 7381, AND 7387 TO 7398 WERE PERFORATED WITH SIX BULLETS PER FOOT. A 500 GALLON MUD ACID TREATMENT WAS GIVEN AND THE WELL SWABBED UNTIL OCTOBER 23, RECOVERING OIL STAINED MUD AND ACID WATER. 3000 GALLONS OF REGULAR ACID WERE PUMPED IN AT THIS POINT, WHICH WENT AWAY UNDER SUB-NORMAL PRESSURE. THREE DAYS OF SWABBING RECOVERED SEVERAL BARRELS OF OIL AT FIRST, FOLLOWED BY ACID WATER AND MUD. 3000 MORE GALLONS OF ACID WERE GIVEN ON OCTOBER 27, USING NYLON BALLS TO PLUG THE OPEN ZONES AND FORCE THE ACID INTO THE TIGHTER ONES. SWABBING UNTIL NOVEMBER 3 RECOVERED ACID WATER, SOME SLUGS OF OIL, SOME GAS, AND MUD.

OPERATIONS WERE SHUT DOWN UNTIL NOVEMBER 10 DUE TO WEATHER AND "FLU." THE WELL WAS SWABBED FOR THREE DAYS, STARTING THE 10TH, AND THERE WAS SOME FLUID RISE WITH SOME OIL AND GAS AT FIRST. WATER AND RED UPPER FORMATION APPEARED AND IT BECAME EVIDENT THAT THE CEMENT BEHIND THE CASING WAS CHANNELLED. IT SHOULD BE NOTED THAT THE OIL RECOVERED ON SWABBING DID NOT HAVE THE CHARACTERISTICS OF MISSISSIPPIAN OIL AND IS PRESUMED TO HAVE COME FROM A ZONE BEHIND THE CASING UP THE HOLE, EITHER FROM THE LOWER PARADOX OR LOWER HERMOSA.

ON NOVEMBER 18, THE PERFORATED ZONE WAS SQUEEZED WITH 175 SACKS OF CEMENT IN AN EFFORT TO SEAL OFF THE APPARENT CHANNEL BEHIND THE CASING. THE HOLE WAS CLEANED UP, CEMENT DRILLED OUT OF CASING, THE ZONE FROM 7388 TO 7400 WAS RE-PERFORATED WITH SIX JET SHOTS (MCCULLOUGH) PER FOOT, AND THE HOLE SWABBED DRY BY DECEMBER 6. ON DECEMBER 7, THE WELL WAS TREATED WITH 2000 GALLONS OF GEL-X-100 ACID. THE WELL WAS SWABBED THE 8TH AND 9TH, AND WHEN ALL BUT A FEW BARRELS OF THE ACID CHASER WATER WERE RECOVERED, SALTY-MUDDY WATER BEGAN ENTERING THE HOLE, FOLLOWED BY RED MUDDY WATER AND A SLIGHT OIL FILM. APPARENTLY, THE LAST ACIDIZING AND PRESSURE RE-OPENED THE CHANNEL, AND FLUID FROM THE ANNULUS BETWEEN THE CASING AND HOLE STARTED RETURNING.

THE PERFORATED ZONE WAS RE-SQUEEZED WITH 100 SACKS OF CEMENT ON DECEMBER 12. THE CEMENT WAS DRILLED OUT OF THE CASING THE 14TH, AND THE WELL WAS RE-ACIDIZED WITH 1600 GALLONS ON THE 16TH. SWABBING ON THE 17TH AND 18TH PRODUCED SOME OIL, OIL CUT MUD, AND THEN THE RED MUDDY WATER AGAIN. IT APPEARS THAT THE CHANNEL IS STILL THERE. THIS LAST OIL APPEARS TO BE THE SAME AS THAT MENTIONED PREVIOUSLY.

THE WELL IS BEING SHUT DOWN TEMPORARILY TO REVIEW THE OPERATION AND MAKE FURTHER PLANS BEFORE PROCEEDING WITH ADDITIONAL COMPLETION WORK. INDICATIONS THUS FAR ARE THAT THE MISSISSIPPIAN ZONES HAVE NOT BEEN OPENED AND GIVEN A VALID TEST.

I BELIEVE THAT ONE MORE WELL-PLANNED ATTEMPT SHOULD BE MADE TO ACHIEVE A PROPER TEST OF THE MISSISSIPPIAN SECTION. SHOULD THIS FAIL TO PRODUCE OIL IN COMMERCIAL QUANTITIES, I WOULD DEFINITELY RECOMMEND PERFORATING AND TESTING THE "BLACK OIL" ZONE IN THE INTERVAL 5807 TO 5815. EVEN THOUGH THIS ZONE DID NOT SHOW UP IN DRILLING THE WELL, POSSIBLY DUE TO LOWER PRESSURE THAN THAT FOUND ON THE BIG FLAT, IT APPEARS VERY MUCH THE SAME ON THE GAMMA-RAY/NEUTRON LOG AS DID THIS SAME INTERVAL IN BOTH THE KING AND PURE WELLS. IN THE EVENT THAT THE ABOVE PROCEDURES FAIL TO ACHIEVE COMMERCIAL PRODUCTION, I WOULD RECOMMEND THAT ANOTHER WELL BE DRILLED ON THIS STRUCTURE.

RESPECTFULLY,

J. MURRAY RUBY

Operator FEDERAL OIL CO. Date 10/1/58

Well No. FEDERAL-BOWKNOT #1 Sec. 30, T.25S, R.18E SLM

8/31/58 LANE-WELLS PERFORATED 7" CASING, INTERVALS 7321-7336' and 7352-7359' (UPPER LEADVILLE)

Lane-Wells perforated above intervals with six ½" holes per foot with an additional two holes per feet in intervals 7326-7328', 7333-7335' and 7354-7356'. Ran 2½" and set packer at 7305'.

9/1/58 TESTED LEADVILLE, INTERVALS 7321-7336, 7352-7359' and 7366-7386.

Swabbed through tubing for 12 hours and recovered 74.0 barrels of salt water. Swabbing was interrupted while swabbing line was cut and spliced. Swabbing rate was essentially same as previous test of perferations 7366-7386' only. Pulled tubing. Lane-Wells fired Vibro-frac shots in intervals 7255', 7334', and 7327'. After firing first Vibro-frac found hole filled from 7386.5' to 7386.0'. After firing additional two shots hole filled to 7376'. Had indication of first Vibro-frac shot at surface while last two shots gave no evidence of firing at surface. Re-ran tubing with packer and set it at 7307'.

9/2/58 Retested Leadville, intervals 7321-7336', 7352-7359' and 7366-7386', swabbed for 5 hours and recovered 61 barrels of salt water and rate of entry was again established at 3.5 barrels per hour with slight increase of gas, no colors. Waited on Baker 2 hours. Ran retrievable bridge plug below squeeze packer and set bridge plug at 7363' with squeeze packer set at 7341'.

9/3/58 Dowell acidized interval 7352-7359' with 150 gallons of BDA acid followed by 500 gallons of XFW acid. Acid in place at 1:38 a.m. Breakdown pressure 1400#. Reset bridge plug at 7343' and squeeze packer at 7305' and acidized interval 7321-7336' with 150 gallons of BDA acid followed by 800 gallons of XFW acid. Acid in place at 3:25 a.m. Breakdown pressure 2500#, final pressure 1800#. Started swabbing at 5 a.m. through 2½" tubing with packer set at 7304' and bridge plug reset at 7364'. After lowering fluid level from surface to 3000' the fluid in casing X tubing annulus dropped. Packer appeared to be leaking. Pulled up and reset packer at 7164' to prevent fluid from washing around blank section 7282-7321'. Resumed swabbing at 9 a.m. Swabbed acid water to sump until 7 p.m. Recovered mostly spent acid and then muddy to clear salt water. Only slight show of gas. Released Baker packers and started out of hole at 7:15 p. m. Ran in set production packer at 7160'.

9/4/58 Continued swabbing until 12 p.m. with no change in rate of entry. Recovered all salt water after switching to tanks.

PLUGGED 7" CASING FROM 7386-7270'.

Plugged 7" casing with 25 sacks of Portland cement. This plug covered all holes from 7386' to 7321 and shut holes 7282-7283'.

Operator FEDERAL OIL CO. Date 10/1/58
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9/5/58 Waited on cement 12 hours. Pulled out of hole and waited for Mc Cullough for 2½ hours. MC CULLOUGH SET CAST IRON MODEL K BRIDGE PLUG AT 5900' using wire line setting tool. PERFORATED 7" CASING AT 5893' WITH FOUR ½" HOLES.

TESTED 7" CASING FOR WATER SHUT-OFF AT 5893 O.K.

Ran in with squeeze packer and set at 5828'. B-J cementers applied 2800# without loss of fluid or pressure for 10 minutes. Released packer and pulled four stands and ran Mc Cullough swing-jet. Lost 5 3/4 hours while Mc Cullough repaired equipment.

9/6/58 PERFORATED 7" CASING AT 5750' WITH FOUR SWING-JETS run through 2½" tubing.

TESTED 7" CASING FOR WATER SHUTOFF THROUGH HOLES AT 5750' & 5893' O.K.

Applied 3300# as above and had no loss of fluid or pressure after repairing manifold. Pulled Baker squeeze packer. MC CULLOUGH PERFORATED 7" CASING 5806-5816' WITH THREE SUPER JET SHOTS PER FOOT. All measurements taken from Gamma-Collar log corrected to original Lane-Wells measurements. Reran 2½ tubing and set packer at 5791'. Waited on Dowell 17 3/4 hours.

9/7/58 Spotted 50 gallons of Dowell Jet-X 830 plug material above bridge plug at 5900' and over holes at 5893'. Plug in place at 9:25 a.m. Pulled up and set packer at 5796'. Packer failed to hold. Picked up and reset at 5727'. Acidized perforations 5806-5816' with 500 gallons of Dowell BDA acid. Had breakdown at 3400# and pressure dropped to 3250# when acid hit perforations. Pumped acid away at ½ barrels per minute at 3250#. Held 3200# pressure on tubing for 25 minutes. Casing pressure remained at 1000#. Bled back 5 barrels and casing pressure remained at 1000#. Retested 7" casing 5750-5806' O.K. Reset packer at 5788' but failed to circulate around blank section 5750-5806'. Reset packer at 5788' and swabbed through 2½ tubing. Well swabbed dry after recovering 37 barrels of displacing fluid, and .75 barrels partially spent acid. No oil or gas shows. Failed to recover balance of acid water displaced to formation.

9/8/58 PLUGGED 7" CASING 5850-5700'.

Plugged 7" casing with 25 sacks of Portland construction cement equalized through open-end tubing. Mc Cullough arrived at 4 a.m. SET CAST IRON BRIDGE PLUG IN 7" CASING AT 4660'. Perforated 7" casing at 4649' with 4 ½ holes. Ran Baker full bore cement squeeze tool and set at 4591'. CEMENTED 7" CASING AT 4644' WITH 35 SACKS OF PORTLAND CEMENT mixed with 7% (by weight Na Cl.) Applied 200# to hole 4649 through 2½ tubing with packer set at 4591' and holes started taking fluid. Pumped 4 barrels away at 1 3/4 to 5½ barrels per minute. Maximum pressure 1400#. Spotted cement and set packer. Squeezed 30 sacks of cement through holes leaving a calculated 5 sacks cement inside 7" casing.

Operator FEDERAL OIL CO. Date 10/1/58

Well No. FEDERAL-BOWKNOT #1 Sec. 30, T.25S, R.18E SLM

9/8/58 Cement in place at 12:25 p.m. Mixing time 9 minutes. Displacing and squeezing 19 minutes. Maximum and final pressure 1400#. Held 200# pressure for 3 hours. Released packer and reverse circulated with packer hung at 4273'. Circulated slightly cement cut water from bottom. Felt for cement at 7:15 p.m. and found solid cement top at 4632'. Mc Cullough failed to fire swing jets through 2⅛" tubing. Pulled tubing.

PERFORATED 7" CASING AT 4403'

Mc Cullough perforated 7" casing at 4403' with four ½" bullet holes. Reran Baker full-bore squeeze packer and set at 4338.

9/9/58 CEMENTED 7" CASING 4403'

Cemented 7" casing with 50 sacks of Portland cement mixed with 7% (by weight) salt (Na Cl). Applied 600# and holes took fluid at 5 barrels per minute. Spotted cement and set packer. Squeezed 45 sacks through holes. Hesitated on last 4 sacks as pressure failed to build above 600#. Final pressure 400#. Cement in place at 1:01 a.m. Mixing time 15 minutes. Displacing and squeezing 41 minutes. Held 350# pressure until 6:00 a.m. Felt for top of cement and packer ran to 4632'. Cement slurry sample at surface still was not set. Concluded cement had delayed setting time. Pulled packer and reset at 4338'. Applied 1000# and had no loss of pressure for 20 minutes. Reverse circulated and recovered only slightly cement-cut water from bottom. While waiting on cement, crew was off from 12 noon 9/9/58 to 8 a.m. 9/10/58.

9/10/58 Found only stringers of cement 4403' to 4622' with 6" bit. MC CULLOUGH PERFORATED 7" CASING INTERVALS 4513-4525', 4529-4534', 4536-4552' AND 4554-4560' WITH THREE SUPER CASING JET SHOTS PER FOOT. Ran 2⅛" tubing and set packer at 4491'. Swabbed 22 3/4 bbls. in 2¼ hours and fluid in casing annulus dropped away and equalized inside tubing. Found packer still seated and pumping test indicated cement job had failed with fluid circulating around blank 4403-4513'. Pulled up and reset packer at 4373'. Swab tested perforated interval 4513-4560' and holes 4403'.

9/11/58 Swabbed a total of 26 hours. Recovered 210 bbls. of muddy salt water that graded to slightly muddy salt water with fair blow of flammable gas. Salt water tested saturated.

9/12/58 PLUGGED AND MUDDED WELL.

PLUGGED 7" CASING WITH 50 SACKS OF NEAT PORTLAND CEMENT FROM4595-4320'.

This plugged off the perforations 4560-4513' and shot holes at 4403'. Mixed and displaced 50 sacks of cement through 2⅛" open-end tubing. Started mixing at 12:22 p.m. Mixing time 20 minutes, displacing time 16 minutes. Cement in place at 12:58 p.m. Pulled up 2 stands and filled casing with 10.5 mud salvaged from old drilling sump. Had no cement returns from tubing while displacing salt water from hole indicating cement plug was properly equalized. Laid down tubing.

9/13/58 Tore out repair rig. Abandoned well September __, 1958.

FEDERAL OIL COMPANY
Bowknot #1
Grand County, Utah

SUMMARY OF HISTORY OF OPERATIONS:

The location for this well was made May 3, 1957. The well was spudded on May 10th with a Walker-Neer S-43 Spudder by the Denman Drilling Company of Farmington, New Mexico. Operations with the cable tool rig were unsatisfactory and drilling was discontinued at a depth of 384 ft. on May 25th.

The Denman Drilling Company moved in an Ideco 525 rotary rig, set 165 ft. of 13-3/8" surface casing on June 10th, and started drilling ahead from 384 ft. (394 ft. rotary) with an 8 3/4" hole on June 20th.

Drilling proceeded to a depth of 1948 ft. by June 26th, with only minor lost circulation and one short fishing job for twisted off drill collars. At a depth of 1948 ft. the drill pipe became stuck and five days were spent backing off and washing over.

Drilling resumed on July 1st. and proceeded without difficulty to 4100 ft. on July 20th. At this point the top of the salt was reached and the mud was converted to salt base. As soon as the mud was conditioned drilling resumed and proceeded to a depth of 5549 ft. on July 30th. At this point the drill pipe became stuck again and a seven day fishing job ensued. Drilling ahead resumed and junk in the hole gave trouble for a few days. 6674 ft. was reached on August 12th without more than normal difficulty. At this point 8 line were strung up on the blocks. It should be noted here that the drill pipe was in very poor condition and constant caution and inspection was necessary.

Drilling from 6674 ft. to 7236 ft. was carried out by August 23rd without difficulty. At this point coring began. Core #1 from 7236 ft. to 7272 ft. was pulled on August 25th, and being all Molas formation, drilling resumed. The hole was drilled from 7272 ft. to 7395 ft. by August 28th, when coring resumed. Core #2 was pulled on August 29th, 7395-7404, only 9 ft. being cut due to breakage of the weight indicator. Core #3, 7404-7462, was pulled September 2nd. Core #4, 7562-7500, was pulled September 5th, core barrel jammed. The zone from 7500 ft. to 7529 ft. was drilled with an 8 5/8" bit, and coring resumed at this depth. Core #5, 7529-7574, was pulled on September 8th. This was the total depth of the hole.

7574 ft. of 7" casing was run on September 9th, cemented on the 10th, and left shut in until the 12th. At this point the Denman rig was released in order to move on a smaller unit

for completion work.

Data on completion is contained in the Appendix of this report. Please see data under other headings for details on location, elevations, casing, deviation, sample log, cores, etc.

GENERAL DATA:

Well: Bowknot #1

Location: NW¼, SE¼, SE¼ of Section 30, Township 25 South, Range 18 East, S.L.M. 760 ft. from East line and 1120 ft. from South line of Section 30.

Lease Number: U-06365.

Ground elevation: 5158 ft.
Derrick Floor elevation: 5160 ft. (cable tool).
Rotary Kelley Bushing elevation: 5170 ft.

Well spudded: 10th of May, 1957.

Contractor: Denman Drilling Company.

Geologist: J. Murray Ruby.

CASING DATA:

Conductor casing: 17ft. of 16", cemented full length.

Surface casing: 13 3/8", H-40, 48#, 8 rd. set at 165 ft., R.K.B. Cemented full length with 85 sx. Halliburton.

Production casing: 7", (1971 ft. of No. 1, grade "D", 26#, 10 V thread) & (5603 ft. of No. 1, J-55, 23 #, 8 rd. thread) to total depth of 7574 ft. Rand guide shoe, and float collar between first and second joints. Cemented with 585 sx. of cement and 82 sx. of salt (NaCl). The salt was mixed with the first 490 sx. of cement, giving a mixture of 17% salt. The last 95 sx. were run straight. Pumped by Halliburton, chased with plug to float collar, shut in under pressure for over 60 hours. Four centralizers were used through the 7300-7550 zone. Calculated fill up - to 3800 ft. from surface.

HOLE SIZE:

Drilled 15½" with cable tools to 384 ft. Drilled 8 3/4" from 384 ft. to 7502 (rotary), and 8 5/8" from 7502 to total depth— 7574 ft.

7272-7314 Samples highly contaminated. All Molas formation. Series of variegated siltstone and shale-gy, purple, choc-brn, with mostly soft rust-brn from 7290 to 7314.

TOP OF LEADVILLE FORMATION (Mississippian) 7314 ft. (7316 GR/N).

7314-7350 Samples contaminated. Limestone-lt. gy-brn to gy f/c, mostly hd and dense, silty and argillaceous i/p, dolomitic i/p, traces of u/v fluorescence. Drilling time and gamma ray-neutron log indicate zones of porosity and probably oil content.

7350-7395 Limestone-as above, more gy and xln i/p, traces of u/v.

7395-7404 Core #2. Recovered 9 ft.
Limestone- dolomitic, gy-brn to gy, f/xln, hd, dense, numerous vertical fractures, some filled stylolites, large vugs filled w/xln anhydrite, most fracs filled w/anhydrite.
Several large vertical fracs between 7399 and 7402 flushed with mud and filled with lost circulation material.
Core bleeds light yellow-gn oil from fracs between 7399 and 7401. Oil has slight sulfur odor. From 7402 to 7404, darker gy-brn with some small random fracs & tight stylolites. Bleeds gas & water (salty-could be filtrate).
U/v fluorescence in all fracs from 7395 to 7404.
Last 2 ft. had only a trace of a few specks of u/v.

7404-7462 Core #3. Recovered 57 ft.
Core bleeds oil & gas from 7409-10, 7424-26½, 7428-33 (good), 7457-58½ (best). All except 8' noted above bleeds salt water from fractures. Water loss of drilling mud was over 20.
Fractures in whole core, random to vertical, anhydrite filled, some stylolites. Slight vuggy porosity from 7454 to 7455 looks wet, bleeds salt water.
7404-08 Limestone-gy to dk gy, u/v along fracs.
7408-10 Limestone-s/dolomitic, f/xln, gy-brn, anhydritic w/anhy. filled fracs. U/v along fracs.
7410-12 Limestone-s/dolomitic in streaks, gy to gy-brn, hd, tight, u/v along fracs.
7412-14½ Limestone-gy to gy-brn, silty, some porosity, w/anhy, incls & small filled fracs.
7414½-18 Limestone-dolomitic, gy-brn, anhy. filled vertical fracs, some reddish filling.
7418-23 Limestone-gy-brn, anhydritic, gy waxy shale to 19½-20, w/gy to dk-brn chert.
7423-24 Limestone-gy, hd, tight, dolomitic.
7424-33 Limestone-gy to gy-brn, some porosity (xln-ss w/good odor and u/v, stained, a few small vugs), some vugs 28-28½ up to ¼", xln, some anhy. incls, sugary i/p, trace of reddish stain, shaly (gy-waxy) i/p, anhy. filled fracs, crse xln and crinoidal i/p.
7433-35 Limestone-dolomitic, gy, hd, tight, crse xln i/p, gy-gn shale incls i/c.

FORMATION TOPS:

Formation	Sample top	Gamma ray/neutron
Kayenta	surface	surface
Wingate	243	210
Chinle	535	520
Moenkopi	890	830
Upper Cutler		1370
White Rim SS	1670 ?	1466
Lower Cutler		1654
Rico	2198	2188
Upper Hermosa	2723	2723
Upper Paradox		---
Middle Paradox (salt)	4080	4070
Lower Paradox	6906	6908
Lower Hermosa	7220	7218
Molas	7232	7233
Leadville (Miss.)	7314	7316
Madison		7525

7435-36½ Limestone-gy, hd, tight, f. to crse xln, with blk incls i/p--shale & possible oil residue.

7436½-40 Limestone-gy, dolomitic, anhydritic, xln anhydrite seam from 7437½ to 7438½.

7440-54 Limestone-gy, hd, tight, f/xln, w/rd staining and waxy gn shale incls i/o.

7454-60 Limestone-gy to gy-brn, some porosity (very small vugs), 57-58 oil stain and 50% u/v, 58-59 oil stain and 90% u/v, good odor, anhydritic 59-60--tight.

7460-61 Limestone-gy-brn, dense, hd, tight.

7462-7500 Core #4. Recovered 38 ft.

7462-64 Limestone-dolomitic, gy, dk gy, hd, tight, f/xln, some anhydrite seams.

7464-70 Limestone-gy to gy-brn, w/rd coloration a/p, f. to crse xln, some gy-gn shale partings, fossiliferous--brachiopods and crinoids, bleeds a very slight amount of oil stain from random hairline fracs--7467-68.

7470-80 Limestone-gy to gy-brn, f. to crse xln, few rd spots, gn shale ptgs @ 73½ & 76½, hd, tight, oolitic i/p, traces of pyrite, bleeds a very slight amount of oil stain from random hairline fracs--7478-79½.

7480-90 Limestone-gy to gy-brn, similar to above, badly broken and fractured from 7481 to 7485 and 7487 to 7490--vertical fracs, 2" of dk brn to blk chert @ 7483½, fossiliferous--crinoids and brachiopods, oolitic i/p, trace of oil u/v along hairline random fracs from 7484 to 7485--odor on break.

7490-7500 Limestone-lt. gy to lt. gy-brn, dense to crse xln, some rd coloration @ 96½, ½" seam of wh chert @ 97½, fossilif--brachiopods, some fairly good specimens, badly broken w/vertical fracs--7490-99, hd, dense, tight, w/some anhy. seams & incls.

7500-7529 Drilled. Samples worthless. Circulation sample (1 hr.) at 7529: Limestone-lt. gy-brn to gy, f/xln to chalky, traces of u/v.

Presumed to represent zone from about 7523 to 7529.

7529-7574 Core #5. Recovered 42 ft.

Entire core dolomitic limestone, wet, porous, Highest porosity flushed with drilling mud.

7529-33 Limestone - dolomitic, lt. gy w/some dk gy to blk coloration, f. to crse xln, vuggy and porous i/p, random to vertical fracs, wet.

7533-35 Limestone- dolomitic, gy to dk gy-brn, more dolomitic than above, s/vuggy i/p, anhydritic i/p, some anhy. incls, mostly hd & tight, wet.

7535-43 Limestone- dolomitic, gy, numerous small vugs, porous, anhydritic (xln i/p), wet.

7543-47 Limestone - dolomitic, gy to gy-brn, some small vugs, mostly hd and tight, f. xln, fossilif.-crinoid molds, trace of pyrite.

7547-55 Limestone-dolomitic, lt. gy to dk gy & wh, numerous small vugs, vertical fracs 7547-53½ and 7553½-55, f. to crse xln, most vugs lines with xls, anhydritic i/p, wet.

7555-60 Limestone-dolomitic, lt. gy to wh, numerous small vugs, some large vugs (up to ¾" i/p), porous, mud-flushed i/p, anhydritic i/p, wet.

7560-63 Limestone-as last above, vugs up to 1" - 7561.

7563-65½ Limestone-gy to gy-brn, some small vugs, generally tight, anhydritic, wet.

7565½-70 Limestone-as 7555-60, numerous large vugs - 7566-67, 7567-70 badly broken and fractured, almost cavernous i/p, mud-flushed i/p, wet.

7570-74 Presumed to be limestone as last above.

TOTAL DEPTH OF HOLE -7574 ft.-

HOLE DEVIATION FROM VERTICAL:

Depth	Degrees
889	3/4
1814	1 1/2
2175	3/4
2463	1/2
2592	1/2
2718	1 -
2863	1 1/4
3050	1 1/2
3139	1 3/4
3305	1 1/2
3388	1 3/4
3587	1 1/4
3690	1 1/2
3836	1 -
3906	1 1/2
4005	1 1/2
4303	4 1/2
4414	4 1/2
4461	4 -
4521	4 -
4549	3 1/2
4625	3 1/4
4649	2 7/8
4960	2 1/4
5408	1 1/2
5632	4 1/2
6026	4 3/4
6579	4 -
6926	4 -
7052	3 1/2
7203	3 -
7236	3 -

SAMPLE LOG
Bowknot #1
Federal Oil Co.

Depth	Description
0 -100	No samples caught. Well spudded in Kayenta formation.
100-120	Sandstone-tan to rd-brn, med, subangular to rounded, calc, w/some rd-brn shale stringers, silty l/p.
120-136	Sandstone - lt. rd-brn, med, calc.
136-162	Sandstone - rd-brn, v.f. to med, s/calc, s/micac, ferruginou
162-189	Sandstone- tan, f. to med, s/calc, silty, friable.
189-212	Sandstone - lt. tan to wh, as last above.
	TOP WINGATE FORMATION 210'
212-232	80% sandstone-dk rd-brn, v.f., silty, s/calc, s/micac, ferr.
	20% shale - maroon w/some gn mottling, bentonitic.
232-247	10% shale - as last above
	90% sandstone- rd-brn, f. to med, calc, s/micac.
247-265	Sandstone - tan, f. to med, friable.
265-305	Sandstone -rd-brn, v.f. to med, s/calc.
305-319	90% sandstone - as last above.
	10% sandstone - tan, med. to f., calc.
319-342	Sandstone - tan to rd-brn, as above.
342-384	Sandstone-tan to rd-brn, f. to med., friable.
	Note: Operations with cable tools discontinued at 384 ft. and resumed with rotary tools. Change in elevation from derrick floor of cable tools to rotary Kelly bushings starts rotary samples at 394 ft.
394-500	Samples all cement-no formation present. Section is Wingate as last above.
500-540	Samples nearly all cement. A few grains of Wingate SS present.
	TOP CHINLE FORMATION 520' (From GR/N).
540-630	90% sandstone-tan to rd-brn, med w/some crse grns, calc.
	10% sandstone & shale - rd-brn to rd, w/some cement.
630-700	as above, w/much more red to maroon shale.
700-750	60% shale- rd-brn to rd.
	40% shale- gy to gn, w/some white to gy & gn med sandstone.
	Much cave, drag, and cement in the samples.
750-900	As above, w/more gray shales and sand.
	Note: All rotary samples to this depth are worthless. They do not represent a true picture of formation drilled and are a mixture of recirculated cuttings, cavings all up and down the hole. Fresh water is being used as drilling fluid.
	TOP MOENKOPI FORMATION 830' (from GR/N).
900-910	Mixture of rd shale, gy shale, rd-brn to wh to gn sandstone, cement, etc., with about 10% choc-brn, v.f. sandstone and siltstone - probably Moenkopi fm.
910-980	As above, more choc-brn. Still much cave.
980-1000	Siltstone & sandstone-choc-brn to red-brn, v.f. sandstone, shaly l/p, f/micac, some gy & gn mottling l/p. Some cave and drag. Fair sample.

1000-1350 Choc-brn siltstone, sandstone, & shale as last above, with much cave, drag, and recirculated cuttings. Worthless.

1350-1400 As above, with considerably gy shale and siltstone and some f. rd sandstone. Traces of gypsum (?). Much contamination.

1400-1450 Same mixture as above, w/higher % of rd to maroon silty-sdy shale

TOP CUTLER FORMATION 1370' (from GR/N).

1450-1510 Shale & siltstone-rd to maroon, sdy l/p, w/considerable gy shale and siltstone. Still much cave and drag. Cement. Some f. gy, micac sandstone.

TOP WHITE RIM MEMBER OF CUTLER FORMATION 1466' (from GR/N).

1510-1560 Same mixture as above, with 5% to 10% sandstone-gy to wh, f. to med, silty l/p, calc, s/micac.

1560-1600 Samples poor. Same mixture as above series with diminishing amount of the white to gray sandstone.

1600-1680 Same conglomeration as above. Traces of gy to tan, v. silty, impure limestone (?).

TOP LOWER MEMBER OF CUTLER FORMATION 1654' (from GR/N).

1680-1700 50% sandstone-rd-brn, v.f. to crse, poorly sorted, calc, f/micac, s/ferr.
50% sandstone-white to lt. tan, med to crse, well-sorted sub-rounded, calc, clean.

1700-1740 60% sandstone-wh to lt. tan, as above
20% sandstone-rd-brn, as above, coarser.
20% sandstone-brn to lav, v.f. to crse, poorly sorted, s/calc, grains coated w/purplish mineralization

1740-1760 Sandstone-brn to lav, as above. Some drag.

1760-1800 Sample practically all cave. Evidence of section being sandstone as last above.

1800-1850 Sandstone-rd to dk rd-brn, v.f. to med, calc, ferr, highly micac l/p--much blk biotite.

1850-1900 Sandstone-as last above, coarser grained, becoming arkosic-large grains of orange to flesh colored feldspar.

1900-1990 Sandstone-rd to dk rd-brn, v.f. to v. crse, calc, ferr i/p, h/micac i/p, arkosic-large grains of orange, reddish, and flesh colored feldspar.

1990-2020 Sandstone-rd w/streaks of wh, v.f. to f. & med, calc, micac, interbedded with siltstone-choc-brn, calc, micac.

2020-2040 As above, w/some wh to lt. gy sandstone & possibly interbedded arkose.

2040-2110 Same series as 2000-2020, coarser grained toward bottom.

2110-2140 Sandstone-lt. rd-brn to orange & wh, v.f. to crse (some v. crse feldspar grns), arkosic, calc, micac.

2140-2180 Series as 2100-2110, w/some v. crse qtz and feldspar grns.

2180-2190 Sandstone-rd-brn, brick-rd to flesh & wh, v.f. to f., calc, h/micac-much biotite i/p, arkosic i/p, some choc-purplish-brn h/micac (biotite) siltst.

2190-2200 60% sandstone - arkosic, as last above.
40% limestone - wh to gy, v. f. xln i/p (top 2198).

TOP RICO FORMATION (2198' samples) (2188 GR/N).

2200-2210 30% Limestone-gy, silty and sdy i/p.
70% Arkose-rd-brn to flesh, f. to v. crse, micac i/p, calc.

2210-2250 Siltstone-dk gy to dk purplish gy, h/micac, calc, sdy i/p, grading to dk gy shale in lower part.

2250-2260 90% Siltstone and shale -- as above.
10% Limestone-gy to tan, sdy i/p, some gy-brn chert.

2260-2270 Limestone-gy to dk gy, silty & sdy i/p, much brn to gy-brn chert.

2270-2280 30% Limestone- as last above.
70% Limestone-wh to dove gy, w/some soft dove gy shale (?).

2280-2300 Limestone - gy to dove-gy.

2300-2320 40% Limestone- dove-gy, s/fossiliferous-crinoidal.
60% Siltstone-choc-brn, sdy, h/micac-muscovite, tiotite, and phlogopite, calc.

2320-2330 Siltstone - as last above, grading to shale i/p.

2330-2340 50% Siltstone - as above.
40% Siltstone & sandstone - gy calc, h/micac.
10% Limestone- gy, sdy.

2340-2360 Limestone - gy to dove gy, sdy i/p, s/crinoidal, some rd-brn to amber chert.

2360-2380 Limestone-gy to wh, fossiliferous-crinoids & brachiopod molds, sdy, brn chert, grading to dk gy, sdy, micac siltstone.

2380-2400 Sample worthless.

2400-2410 Limestone-gy to dove gy, s/fossiliferous, sdy i/p, s/micac i/p, brn & orange chert, grading to siltstone-gy to purplish-gy, micac.

2410-2420 20% Limestone- as last above.
80% Sandstone- rd-brn to flesh, med to crse, angular to sub-rounded, calc, arkosic, mostly loose grains--appears poorly cemented, grains of qtz and feldspar - cl-col, rd, flesh, yel, orange, purplish, etc.

2420-2430 Arkose-flesh to orange, med to crse, calc, angular to rounded, much feldspar.

2430-2460 Sandstone & Arkose - as above, finer grained.

2460-2470 Limestone-gy to dove gy, f/xln i/p, some gy-brn to orange chert, very silty & sdy & micac i/p.

2470-2480 Sample badly contaminated-probably rd, brick-rd, to flesh sandstone & arkose.

2480-2490 Arkose-rd to orange-pink-flesh, f. to crse, poorly sorted, angular to subrounded, calc, micac, much feldspar.

2490-2520 Arkose-as last above, coarser grained, probably interbedded w/rd-brn to choc-brn, h/micac siltstone.

2520-2530 Sandstone-rd to brick-rd, v.f., silty, ferr, calc, micac (much blk biotite). Sample poor.

2530-2570 Arkose-rd-brn to flesh, f. to crse, calc, s/micac, possibly some interbedded gy limestone (?).

2570-2580 Sandstone-lt. rd-brn, f. to med w/some crse, arkosic, calc, s/micac.

2580-2590 40% Arkose - as 2530-2540
60% Limestone-gy, sdy & micac i/p, s/fossiliferous.

2590-2600 50% limestone - as last above.
50% Arkose - as above series.

2600-2640	Samples poor. Probably Arkose and gy limestone as above series.
2640-2650	20% Limestone - gy. 80% Sandstone & akrose - as above series.
2650-2680	Samples poor to worthless - probably limestone - gy to tan, and arkose and sandstone as above.
2680-2720	Sandstone-rd-brn to flesh, med w/some crse, arkosic, as above series, samples poor.
2720-2730	40% Arkose and sandstone - as above. 60% Limestone-gy, gy, brn, dove gy, silty-sdy,micac i/p.
	TOP HERMOSA FORMATION 2723 ft. (both from samples and GR/N).
2730-2750	Limestone-gy to gy-brn, f/xln, silty, brn chert.
2750-2770	Limestone-as last above, dove gy i/p, siltstone i/p.
2770-2790	Limestone & siltstone-gy to dk gy, micac i/p, samples badly contaminated.
2790-2800	Limestone-gy to dove gy, f/xln i/p, sdy i/p, some chert.
2800-2810	Samples worth-less, probably as last above.
2810-2820	Sample worthless -probably 30% limestone as above and 70% sand-drilled fast. Possible water zone.
2820-2840	Samples very poor-probably sandstone-lt. gy, f. to v.f., s/calc, s/micac, grading to gy siltstone.
2840-2880	Samples worthless-probably gy siltstone & gy limestone with possibly some arkose (flesh). Lost circulation 2840-2850.
2880-2890	Sample contaminated-probably Arkose and limestone as above series.
2890-2930	Complex mixture- limestone, siltstone, & arkose as above series. Samples very poor.
2930-2940	50% Limestone-gy, f/xln i/p, f/micac i/p. 40% Siltstone -dk gy-brn. 10% Sandstone -lt. gy, v.f. to med, calc, micac (some gn).
2940-2950	Limestone-gy to gy-brn, sdy & micac i/p, silty i/p.
2950-2980	Limestone-gy to dove gy, silty-sdy,micac i/p, pyritic i/p.
2980-3000	Limestone -gy to dove gy, f/xln, possibly some f. gy sandstone.
3000-3010	Limestone - gy to dk gy, f/xln i/p, silty & sdy i/p.
3010-3040	Limestone-gy to dove gy, f/xln i/p, silty & sdy i/p, s/crinoidal, some dk gy-brn chert, with some shale-blk, carbonaceous, pyritic, some gn (?).
3040-3060	Limestone-tan to gy, s/xln i/p, v/sdy and micac i/p, some gy-brn chert. Shows 1% U/V-part may be oil stain and part crystalline fluorescence.
3060-3080	Samples contaminated-probably as above. Shows 5% u/v. Some fluorescence due to contamination (oil stained foreigh material) and some due to crystal structure.
3080-3100	Samples worthless-probably limestone as above with some f. gy sandstone.
3100-3110	Sample worthless-could be dk gy siltstone and shale.
3110-3130	Samples badly contaminated. Siltstone-dk gy, sdy i/p, grading to gy limestone-sdy, micac, and pyritic i/p.
3130-3180	Samples contaminated. Sandstone -gy to gy-brn, v.f., silty, calc, micac, probably grading to siltstone and limestone in lower portion.

3180-3190	Sample contaminated. Sandstone, siltstone, & limestone-as above series, part of ss and Ls are lighter colored.
3190-3210	Samples contaminated. Probably sandstone- gy to lt. gy, f. to med, calc, micac--dk w/some pale gn and orange grains.
3210-3230	Samples highly contaminated. Probably sandstone - as above series, grading to finer and gy-brn color i/p.
3230-3240	Sample contaminated. Limestone - wh to lt, gy-brn, chalky i/p - soft, f/xln and firm i/p.
3240-3280	Samples highly contaminated. Probably limestone and sandstone as above series.
3280-3290	Sample highly contaminated. Probably mostly limestone-wh to lt. dove gy, f/xln i/p, chalky i/p.
3299-3300	Sample highly contaminated. Probably mostly limestone-gy to gy-brn, firm, w/some dk gy to blk siltstone & shale.
3300-3320	Samples highly contaminated. Lim stone - gy to gy-brn, f/xln, sdy i/p.
3320-3340	Limestone -dove gy, f/xln, sdy i/p, cherty.
3340-3350	Sample highly contaminated. Probably limestone-as above, with some gy sandstone and dk gy siltstone.
3350-3370	Limestone-wh, tan, lt. gy, sdy i/p, trace/oolitic i/p
3370-3400	Limestone-gy to gy-brn, sdy i/p, some gy-brn chert, grading to sandstone - gy, f., micac.
3400-3440	Limestone -gy to dove gy, s/fossiliferous, considerable gy-brn chert.
3440-3450	75% limestone-gy-brn to wh, v/sdy i/p, consid. chert. 25% sandstone-wy, v.f., s/micac, h/calc.
3450-3460	Limestone & sandstone-as last above, probably intercaleted, much gy-brn and lt. smokey gy chert.
3460-3480	Limestone-wh to lt. gy-tan, f/xln i/p, s/crinoidal, cherty.
3480-3490	Limestone-lt. gy-tan to lt, gy, f/xln i/p, sdy i/p, considerable gy and gy-brn chert, traces of gn specks, probably glauc. or chlorite.
3490-3500	Limestone-wh to lt. gy & lt. gy-tan, sdy i/p, some chert.
3500-3520	Limestone-as last above, grading to sandstone-wh, v.f., h/calc, gn specks. Ls s/fossilif.-small shell molds.
3520-3529	Lost circulation at 3529½. Limestone & sandstone - as above series, possibly more sandstone than limestone.
3530-3540	Sample contaminated. Limestone & sandstone-as last above.
3540-3560	Samples highly contaminated. As last above.
3560-3570	Sandstone & limestone.-as above series, more Ls than SS.
3570-3590	Samples highly contaminated. Probably limestone-wh to dove gy, sdy i/p.
3590-3600	Sandstone-lt. gy to gy, f. to med, calc, s/micac, grad. to limestone -lt. gy, v. sdy, s/micac.
3600-3620	Samples highly contaminated. Limestone-lt. gy, sdy i/p, some gy chert.
3620-3630	Limestone-lt. gy to gy-brn, sdy and micac i/p, some gy-brn chert, some dk gy-brn, sdy siltstone.
3630-3640	40% siltstone-as last above. 50% sandstone-gy-brn, f. to med, silty, calc, hd. 10% limestone-lt. gy-tan, oolitic i/p, tight.
3640-3650	Samples contaminated. Mostly siltstone-dk gy-brn, sdy, calc, intercalated with sandstone-gy-brn, as last above.

3650-3690	Samples highly contaminated. Mostly as last above.
3690-3700	Sample contaminated. Limestone-lt. gy, sdy, micac, some gy to gy-brn chert.
3700-3710	Sample contaminated. Probably limestone-v. lt. gy, hd & dense, some smokey gy chert.
3710-3730	Samples contaminated. Limestone-gy to gy-brn, s/fossilif., some gy-brn chert, some dk gy siltstone.
3730-3760	Samples highly contaminated. As above series, some limestone-v. sandy & micac i/p. Probably soft gy sandstone 3734-3738.
3760-3780	Samples contaminated. Limestone-gy,dove-gy, gy-brn, xln i/p, sdy i/p, much gy & gy-brn smokey chert.
3780-3820	Samples worthless. Probably limestone-gy to gy-brn, cherty, sdy i/p, pyritic i/p, some f. gy SS @ 3780-84.
3820-3850	Samples highly contaminated. Probably series of gy-brn limestone and dk gy to blk siltstone, with much chert--gy-brn, gy, rd.
3850-3860	Good sample. Siltstone-gy, calc, hd, much gy-brn chert.
3860-3870	Siltstone-gy to gy-brn, Ls i/p, much gy & gy-brn smokey chert, trace of wh gypsum w/pyrite.
3870-3890	Siltstone-gy to gy-brn, much gy & gy brn chert, grad. to 50% limestone-gy, silty & sdy.
3890-3900	Sample contaminated. Limestone-lt. gy to gy-brn, sdy & silty, cherty as above.
3900-3910	Limestone - lt. gy-brn, over 50% oolitic, sdy, some chert.
3910-3920	Limestone-lt. gy-brn, sdy, chert, some dk gy siltstone (?)
3920-3930	Sample contaminated. Limestone-lt. gy to dove gy, f/xln i/p, sdy i/p, gy & gy-brn chert. Some dk gy siltstone (?)
3930-3940	Sample contaminated. Limestone-v. lt. gy, sdy i/p, v. silty i/p, considerably gy smokey chert.
3940-3950	Limestone-lt. gy, f/xln i/p, v. sdy i/o, v. silty i/p, s/micac, tr/pyrite, some gy-brn chert.
3950-3970	Limestone-v. lt. gy, v. sdy, grad to sandstone - v. lt. gy, h/calc, s/micac, v.f. Ls-s/fossilif.
3970-3980	Limestone-lt. gy, sdy, silty. Sandstone-wh, v.f. to f., calc, v/s micac. (3973-79).
3980-3990	Limestone-lt. gy to lt. gy-brn, v. sdy & silty i/p, s/micac i/p, some gy-brn chert.
3990-4000	25% limestone- as last above. 75% sandstone-gy-brn, f., v. calc, s/micac, silty, grad. to Ls. Tr/carbonaceous or asphaltic material, silty.
4000-4010	Sandstone & limestone- as last above, intergrading, abundant brn chert.
4010-4050	Siltstone-gy-brn, gy, hd, sdy i/p, abundant brn & gy-brn chert, possibly some gy-brn Ls & gy siltstone in lower part.
4050-4060	Sample contaminated. 40% as last above, higher % of limestone. 60% probably anhydrite and gypsum, w/some chalky wh Ls. Note: While drilling this sample the mud began to thicken and lose weight, flocculate. Probably caused by reaction of SO_4 ion.

4060-4070 Sample highly contaminated, practically worthless. Mixture of last 70 ft. and by sandstone, much cave-up to Chinle. Possibly new-limestone- lt. brn & lt brn dolomite (?).

4070-4080 Sample highly contaminated mixture as above. Possibly new - shale - gy, s/calc, sdy & silty.
Mud flocculation becoming worse. This zone probably all anhydrite & gypsum.

4080-4090 No sample. Hit break at 4080. Drilled 10 ft. in 21 minutes. Drilled evenly. Probably salt. Circulation samples for 90 minutes produced nothing but complex mixture of above series. Pulled up above fast zone to circulate to prevent excessive wash-out, if salt.

There was thought to be some oil breaking out on pits and some u/v in samples. Careful check revealed the u/v in samples to be pipe dope specked on various types of cuttings and cave. I could find no evidence of oil show on pits either by sight or odor.

TOP OF PARADOX SALT 4080 ft. (4070 ft. GR/N).

4090-4100 Drilled 10 ft. in 18 minutes, evenly like salt. Pulled up above 4080 and circulated 1 hour. Sample highly complex, worthless mixture. No salt, all dissolved if salt.

4100-4160 Drilled salt, halite, to 4154. Samples contaminated. 4150-60 sample- 40% salt; 20% anhydrite-wh gy, f/xln/ 40% sandstone-gy, v.f., silty, calc, s/micac.

4160-4170 Sample highly contaminated. Probably 75% sandstone-gy, as last above; 25% shale-blk, v/calc.

4170-4180 Sample contaminated. 10% shale-blk, as above; 40% sandstone-gy, as above, 50% anhydrite-wh to lt. gy, f/xln & sugary appearance.

4180-4190 Sample contaminated. 45% anhydrite-as above; 10% shale-blk, as above; 50% sandstone-gy, as above 1% chalcedony-rd to orange, possibly vein filling material.

4190-4200 20% anhydrite-wh to lt. gy, f/xln; 80% sandstone-gy, v.f., calc, micac, anhydritic i/p. Drilled salt 4184-93 (?).

4200-4210 40% anhydrite & 60% sandstone-as above, 10% mineral u/v.

4210-4220 10% anhydrite-wh to lt. gy, f/xln.
20% shale-blk, s/calc.
70% sandstone-gy, v.f., silty, calc, micac.

4220-4270 Mixture: 10% anhydrite-as above; 15% shale-blk, calc, fissile; 75% sandstone-gy to gy-brn, calc, v.f., s/micac, some gn-gy. Some mineral u/v. Drilled salt 4238-4268.

4270-4290 Samples contaminated. Practically all cave & drag, up to 30% anhydrite.

4290-4300 Anhydrite and sandstone-as above series, 50/50.

4300-4320 Anhydrite & sandstone as above, about 20% lt. brn-gy siltstone-which has some hydrocarbon odor, slight stain, good u/v, looks hd & tight. Very slight cut with CCl_4. Bleeds some gas. Probably source bed show. No show on pit.

4320-4330	75% sandstone & siltstone-lt. brn-gy, as above, show 15% u/v, weaker than above, less odor, tight. 15% shale-dk blk-brn to blk, silty, soft.
4330-4340	10% shale-blk, silty, f/micac. 80% sandstone-lt. brn-gy, v.f., v. silty as above, u/v, stain, tight. 10% anhy. - wh to gy, f/xln.
4340-4350	50% sandstone and siltstone-as above. 50% anhydrite-wh to gy, f/xln.
4350-4360	Anhydrite and gy gypsiferous sandstone, intercalated.
4360-4380	Sandstone-gy, v.f., gypsif., grading to siltstone gy silty shale. Some anhydrite. Drilled salt 4375-80.
4380-4390	Mixture-anhydrite, sandstone, siltstone, & shale, as above series. Probably drilled salt.
4390-4410	30% anhydrite-wh to gy, f/xln. 70% sandstone-gy to lt. brn-gy, v.f. to f., f/micac, gypsiferous i/p, some blk and gy shale. Probably drilled salt i/p.
4410-4430	Poor samples-sandstone and anhydrite as above. Probably drilled sale w/ss and anhy. stringers.
4430-4490	Drilled salt, Samples worthless, nearly all [illegible].
4490-4500	Samples worthless. Probably drilled anhydrite.
4500-4510	Samples very poor. Mixture of salt, anyhdrite, and sandstone-brn-gy, v.f., silty, gypsif., slight u/v.
4510-4530	90% sandstone & siltstone-lt. brn-gy, v.f., v. silty, f/micac, calc, s/odor and s/flour. i/p, tight. 10% shale-blk, carbonaceous, soft.
4530-4540	70% sandstone & siltstone-as above 10% limestone-brn, vuggy, i/p, no oil or u/v. 30% anhydrite-wh to gy, f/xln.
4540-4563	Anhydrite & sandstone-as above interbedded. Some odor & u/v in the sandstone, tight. Drilled anhydrite from 4556 to 4563.
4563-4723	Drilled salt, halite, clear-colorless. Some reddish coloration in upper portion and possibly some stringers of anhydrite and sandstone.
4723-4728	Drilled Anhydrite.
4728-4738	Drilled salt.
4738-4740	Drilled anhydrite.
4740-4748	Drilled salt.
4748-4764	Anhydrite-wh, v. lt. gy, dirty, some gy, sdy, gypsif., some gy sandstone.
4764-4844	Drilled salt - halite, cl-col.
4844-4873	Samples very poor. Probably drilled salt & anhydrite, interbedded from 4844 to 4849; anhydrite 4849 to 4856; salt 4856 to 4873.
4873-4911	Drilled series of anhydrite-gy-brn, dirty; limestone- gy-brn, v. silty; and sandstone-brn-gy, v.f., anhydritic.
4911-4917	Probably drilled salt
4917-4943	Drilled series as 4873-4911, with some black shale.
4943-4952	Anhydrite-wh, gy, gy-brn, f/xln i/p, dirty & sdy i/p.
4952-4969	Anhydrite, sandstone, & siltstone-as above series.
4969-5207	Drilled salt-halite, colorless, mostly cloudy.
5207-5223	Anhydrite-gy to gy-brn.
5223-5269	Drilled series of anhydrite, as above, and sandstone- gy to gy-brn, v.f. 5235-58- shale - blk, carbonaceous, soft, bleeds gas.
5269-5298	Drilled salt.
5298-5302	Break-anhydrite, as above (?).
5302-5307	Drilled salt.

5307-5311	Break - as above, trace of hard, olive-gn shale.
5311-5342	Drilled salt - halite.
5342-5400	Series: Anhydrite-gy, gy-brn, dirty i/p. Sandstone-gy, lt. gy-brn, v.f. to med, micac. i/p, silty i/p, anhydritic i/p. Limestone-gy, trace. Shale-blk, carbonaceous, fissile i/p, soft, some gy, some gn w/trace of pyrite.
5400-5441	Series: Anhydrite-gy, gy-brn, dirty i/p, interbedded with fine gy-brn sandstone, Anhydrite gpysiferous and mottled i/p.
5441-5470	Drilled salt-halite, co.-col. to clouded & opaque, some flesh colored.
5470-5502	Drilled salt-as above, with increasing flesh to orange coloration. Trace bright gn. Trace of sandstone stringers-bright orange, f., micac. Some sylvite probably present.
5502-5517	Series of shale-brn to blk, calc, soft, s/carbonaceous, silty, bleeds some gas; sandstone-lt. gy-brn, vf , silty, soft, calc, f/micac; some salt interbedded.
5517-5610	Drilled salt as above, diminishing coloration with depth. Took core while fishing from 5549 to 5550 -salt-halite, flesh to orange, possibly some KCl, w/thin laminations of gy silt every 2" to 3", dips about 20 degrees.
5610-5636	Very poor samples, junk in hole. Probably anhydrite and sandstone.
5636-5639	Probably drilled salt.
5639-5656	Samples very poor. Probably anhydrite. Took core while fishing from 5653 to 5655: Anhydrite-gy, wh, gy-brn, mottled i/p, gypsif. & sdy i/p. 1" streak of shale-blk, carbonaceous, firm, odor, bleeds gas, cut wit: CCl_4 brings out oil which has u/v after evaporating.
5656-5706	No samples, Drilled salt-halite.
5706-5716	No samples-probably anhydrite.
5716-5790	Drilled salt.
5790-5815	Samples worthless-probably anhydrite with streaks of sandstone.
5815-5914	Drilled salt.
5914-5942	Probably drilled anhydrite. Samples worthless.
5942-6000	Drilled salt-halite, wh, clouded, with probable anhydrite break from 5974 to 5981.
6000-6366	Drilled salt-halite, mostly clouded, some dirty. Possibly some carnallite between 6040 and 6120.
6366-6408	Samples worthless. Clastic break. Drilling time indicates: Anhydrite-gy 6366-71 Sandstone-gy, f., 6371-92, Shale & sandstone-prob. blk shale 6392-6400, Anhydrite-as above, 6400-08.
6408-6662	Drilled salt-halite, cl.-col to clouded
6662-6758	Clastic break, samples very poor. Interbedded series of anhydrite, shale, sandstone & siltstone. Traces of gy limestone. Vein filling of pyrite, halite, and selenite. Black shale is gas bearing.
6758-6801	Drilled salt
6801-6831	Samples worthless. Probably drilled series of anhydrite, gypsum, sandstone & shale.

6831-6906 Drilled salt. Base of middle Paradox section at 6906 from drilling time and samples.

TOP OF LOWER PARADOX FORMATION 6906 ft. (6908 ft. GR/N).

6906-6940 Samples poor. Series of anhydrite, shale, with some sandstone.

6940-6970 Anhydrite-wh to gy, mottled, f/xln, hd; Shale-blk, carbonaceious, fiss., slickensided i/p, trace of pyrite;
Siltstone-gy to gy-brn, calc, sdy i/p, hd. Gas in shale.

6970-6980 Anhydrite-as last above.

6980-6990 Shale-blk; siltstone-gy, some f. gy sandstone. Much pyrite vein filling.

6990-7000 Sandstone-lt. gy, v.f., calc, s/micac.

7000-7027 Drilled salt. (Note; This salt belongs in the lower Paradox. This zone grades laterally from salt to anhydrite to dolomite from place to place.)

7027-7060 Shale-blk; siltstone-dy gy; some anhydrite.

7060-7080 Anhydrite-shaly and sandy.

7080-7110 Shale-blk, carbonaceous, silty i/p, some pyrite, interbedded with dk gy siltstone, probably stringers and mottling of white to gy anhydrite and f. gy-brn sandstone.

7110-7130 Siltstone-gy to dk gy, calc, hd, interbedded with blk carbonaceous shale, and some anhydrite.

7130-7160 Interbedded series of siltstone-gy-brn, gy, calc, hd; Sandstone-gy to gy-brn, f., calc; shale-blk, carbonaceous; minor gy to gy-brn limestone.

7160-7218 Siltstone-gy-brn, dk gy, calc, hd, interbedded with blk carbonaceous shale and minor gy-brn sandstone and anhydrite.

TOP OF LOWER HERMOSA FORMATION (Pinkerton Trail) 7218 ft.

7218-7233 Limestone-lt. gy-brn, f/xln, clean. Shows some w/v fluorescence and gives slight cut with CCl_4.

TOP OF MOLAS FORMATION 7233 ft. (Basal Pennsylvanian).

7233-7236 Shale-gy, calc, silty, hd.

7236-7272 Core #1 Recovered 33 ft.

2' shale - gy, calc, silty, hd.

4' shale-purple, w/dk yellow banding i/p, some slickensides, calc, hd, waxy i/p.

3' shale-choc-brn, purple-brn, gn, variegated and mottled, waxy & slickensided i/p, small rounded chert pellet inclusions, some large inclusions of red chert.

6' siltstone-gy-brn, rose-brn to wine, mottled, calc, shaly-waxy i/p, very hard, some red chert inclusions i/p.

3' siltstone-gy-purple-brn to rose-gy, calc, hd, some very large inclusions of red chert.

6' siltstone-dk choc-brn w/some lt. gy mottling i/p, calc, pellets i/p, grading to limestone i/p, some clear xln calcite inclusions.

3' shale-choc-brn, calc, some small rounded limestone pellet inclusions, hd, highly slickensided i/p. Bled slight amount of gas when laid down from core barrel (unidentified). Fractured.

7269-72 - probably shale as last above, (not recovered).

Appendix "B"

[illegible] [illegible] Oil [illegible]

[illegible] Sec. [illegible], T.25S, R. [illegible]

[illegible] Service Company of Carter moved in truck-mounted [illegible] rig.

[illegible] well and determined only small water entry from perforations above bridge plug. Pulled tubing loose, [illegible] down packer and ran in with 6" bit. Found top of plug at 7367'.

TESTED 7" CASING AT 7282'.

Mc Cullough perforated 7" casing at 7282-7283' with six ½ holes. Checked collars and corrected measurements to Lane-Wells collar log. Found previous top perforations 7363-7372' by corrected measurements. Perforated the holes 5" above collar at 7288'. Prepared to pressure test holes at 7282-7283' with Howco packer and cement wagon. Howco failed. Lost 11 hours. Called out Dowell.

TESTED 7" CASING CEMENT JOB 7282-7337' O.K.

Applied 2000# through URC packer set 7300' in an attempt to circulate around blank section 7337-7363'. Formation took fluid at 2000# and bled off to 1000#. Had no returns from casing. Tested 7" casing at 7282' O. K. Applied 4500# through Baker Model K retainer set at 7270' with Baker bridge plug set below at 7336'. Formation failed to take fluid and cement job indicated to be okay. Drilled out retainer and found [illegible] apparently had been set [illegible] holes at 7282-7283'.

[illegible]

Set Baker Model [illegible] at [illegible]. Applied [illegible] [illegible] [illegible] casing [illegible]. Pulled [illegible] packer and ran 6", [illegible] bit and resumed drilling on bridge plug at [illegible].

Drilled up bridge plug [illegible] and stopped drilling [illegible] bridge plug [illegible] to have been set at [illegible] and set packer at [illegible] at 10 a.m. [illegible].

Swabbed a total of [illegible]. Continued [illegible] established a [illegible] rate of [illegible] barrels per hour [illegible] a total of 496.5 barrels.

Pulled packer and [illegible] Lane-Wells 3 hours.

[illegible]

Also attempted to obtain cementron log [illegible] of cement. Log indicated [illegible] top of cement at 5600'.

NOTE: From surveyed well location, by John E. Keogh (Reg. Surveyor), shown on print below, Federal Oil Co. Bow Knot # 1 well site was changed for topographic reasons.

Final site is as follows, and drawn in below:

SE¼, SE¼ of Section 30, Township 25 South, Range 18 East, S.L.M.

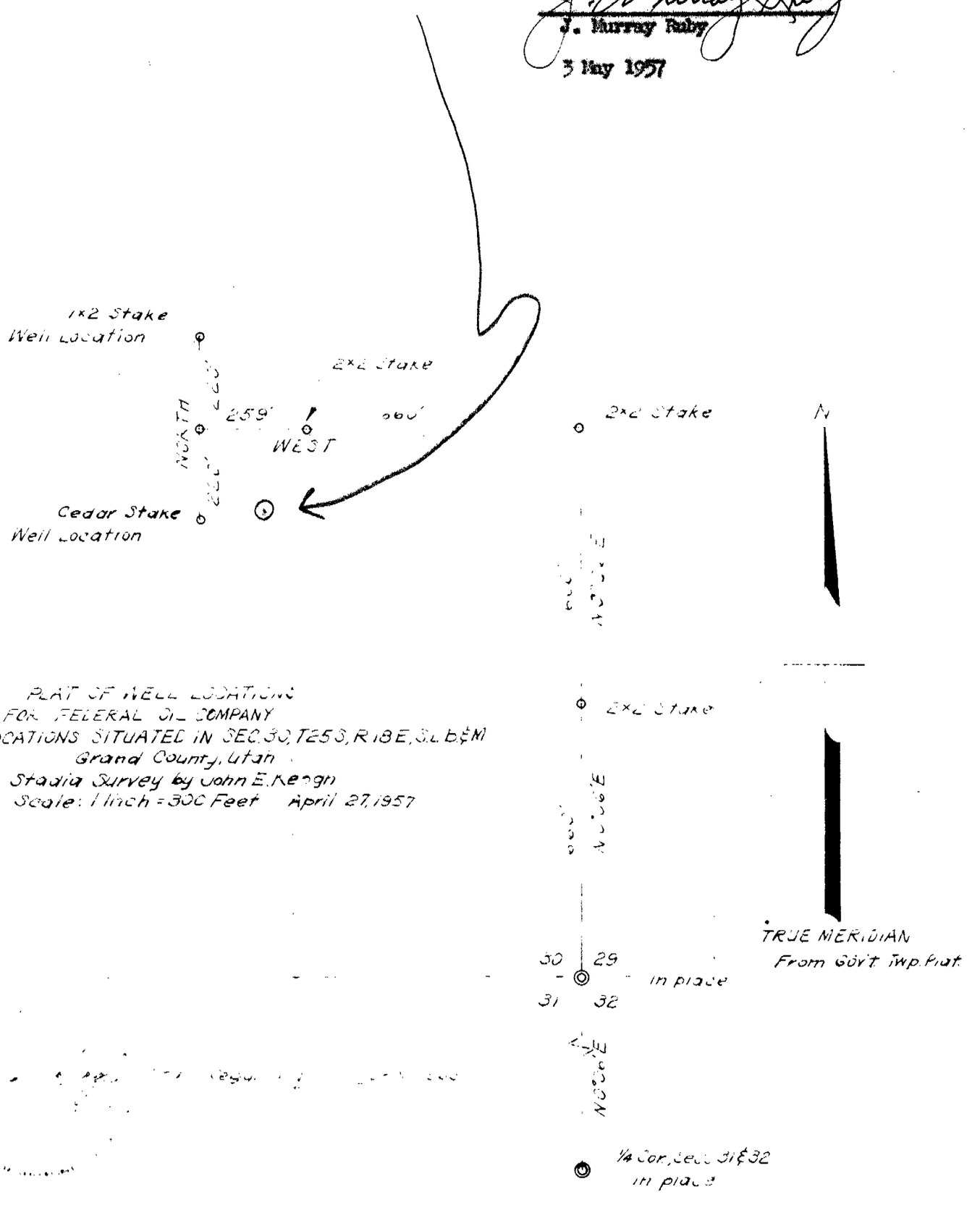
760 ft. from East line of section.
1120 ft. from South line of section.

Measurements were made by Brunton Compass and steel tape from closest survey post placed by Mr. Keogh.

J. Murray Ruby

J. Murray Ruby

3 May 1957



PLAT OF WELL LOCATIONS
FOR FEDERAL OIL COMPANY
LOCATIONS SITUATED IN SEC. 30, T25S, R18E, S.L. B&M
Grand County, Utah
Stadia Survey by John E. Keogh
Scale: 1 inch = 300 Feet April 27, 1957

September 16, 1960

Federal Oil Company
Box 411
Moab, Utah

Re: Well No. Federal 1, Sec. 30, T. 25 S,
R. 18 E, SLBM, Grand County, Utah

Gentlemen:

We have not yet received a copy of your "Notice of Abandonment" and/or "Subsequent Report of Abandonment" for the subject well. We understand such notice has been filed with the United States Geological Survey in Salt Lake City.

Would you please furnish us copies of such notices, in duplicate, so that we may complete our file on this well.

Yours very truly,

OIL & GAS CONSERVATION COMMISSION

ROBERT L. SCHMIDT
CHIEF ENGINEER

RLS:co

cc: Moab Office - U O&GCC

9-12-03 per BLM/SC
PA 9-13-58
LEC